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THE NAUTILUS.

VOL. VIII.

MAY, 1894.

No. 1

LIST OF SHELLS COLLECTED IN JAMAICA.

BY J. B. HENDERSON, JR.

First paper: Glandinidæ, Zonitidæ, Helicidæ.

The following is a list of a collection made by Mr. Charles T. Simpson and myself in Jamaica, during the months of December and January (in part) last. We were upon the island about one month and although we devoted ourselves assiduously to hunting snails, yet so much time was spent in getting about from place to place, and otherwise lost, that our collecting appears, after all, to have been very superficial—a mere hasty gathering of what presented itself along the roadside.

I have attempted, as far as possible, to be “up to date” in the nomenclature. Mr. Simpson cheerfully assumed the heavy task of identifying the material, for which I am very much indebted to him. To Mr. Vendryes I wish to extend my thanks for courtesies shown us by him in Kingston.

1. *Glandina nitidiuscula* C. B. A. Bog Walk.
2. *Glandina unicolor* C. B. A. Montego Bay ; Bog Walk.
3. *Glandina propinqua* C. B. A. W. of Ocho Rios ; Mandeville ; Spurtree Hill ; Port Antonio.
4. *Glandina perplexa* C. B. A. Montego Bay ; St. Anns ; Stony Hill.
5. *Glandina griffithi* C. B. A. Bog Walk.
6. *Glandina similis* C. B. A. Gallina Point ; Bog Walk ; Port Antonio ; Mt. Pleasant ; Hope River ; Ocho Rios ; Mandeville.
7. *Glandina ligata* C. B. A. Mandeville.
8. *Glandina venusta* Pfr. Hope River.

9. *Glandina nemorensis* C. B. A. Hope Bay.
 10. *Glandina elegans* C. B. A. (Bought).
 11. *Glandina philippiana* Pfr. Bog Walk.
 12. *Glandina arcuata* Pfr. Montego Bay.
 13. *Glandina costulata* C. B. A. West of Port Antonio.
 14. *Glandina proxima* C. B. A. Bog Walk.
 15. *Glandina gracilior* C. B. A. Mandeville; Bog Walk.
 16. *Guppya epistylum* C. B. A. Mandeville.
 17. *Zonites* (*Stenopus*?) *simulans* C. B. A. West of Port Antonio.
(This seems, from the characters of the shell, to be a *Stenopus*).
 18. *Sagda foremaniana* C. B. A. Bought.
 19. *Sagda cookiana* C. B. A. Bog Walk; Stony Hill; Mandeville.
 20. *Sagda spiculosa* Shuttl. St. Anns Bay; Ocho Rios; Gallina Point; Bluefields; Buff Bay; Sav. la Mar.
 21. *Sagda connectens* C. B. A. Near Bluefields.
 22. *Sagda epistylum* Müll. Mandeville; Montego Bay; Sav. la Mar.
 23. *Sagda alveare* Pfr. Bog Walk; Stony Hill.
 24. *Sagda maxima* n. s. Eight miles north of Sav. la Mar.
 25. *Sagda jayana* C. B. A. Bog Walk.
 26. *Sagda alligans* C. B. A. Near Sav. la Mar.
 27. *Sagda epistylroides* Fér. Mandeville.
 28. *Sagda* (*Hyalosagda*) *osculans* C. B. A. Montego Bay.
 29. *Sagda* (*Hyalosagda*) *osculans* var. *delaminata* C. B. A. (?) Hope River.
 30. *Sagda* (*Hyalosagda*) *arboreoides* C. B. A. Bog Walk; Buff Bay; Pt. Maria; Hope River; Stony Hill; Petersfield; Spurtree Hill; Mandeville; Pt. Morant; Bowden; St. Anns; Port Antonio.
 31. *Sagda* (*Hyalosagda*) *hollandi* C. B. A. St. Anns; Port Antonio; Ocho Rios; Bowden; Buff Bay; Montego Bay; Mandeville; Gallina Point.
- The *Sagdas* are very variable in size, form and development of internal laminae, and appear often to blend one into another.
32. *Thysanophora spreta* C. B. A. Pt. Antonio. (*Microphysa* [preoccupied] = *Thysanophora*).
 33. *Thysanophora brevior* C. B. A. Gallina Pt.; W. of Pt. Antonio.
 34. *Thysanophora apex* C. B. A. Montego Bay.
 35. *Thysanophora fuscula* C. B. A. Bog Walk.

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A MONTHLY JOURNAL
DEVOTED TO THE INTERESTS OF
CONCHOLOGISTS.



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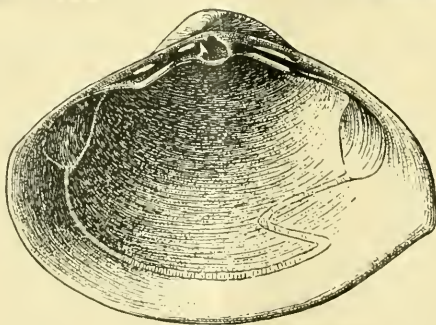
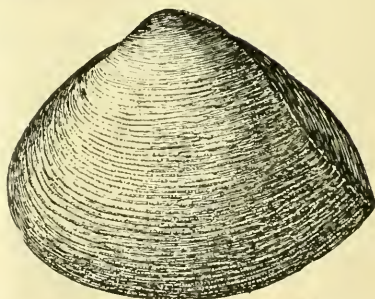
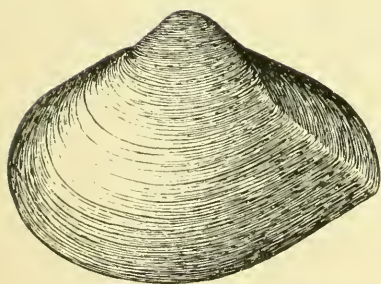
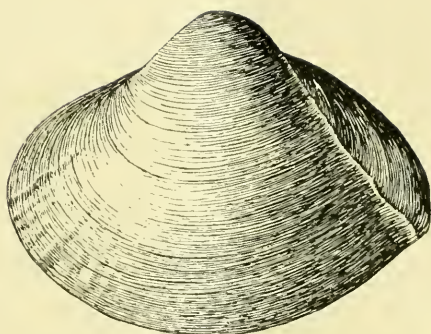
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EXCHANGES,

The following space is to be given to exchanges. Notices not exceeding three lines, will be free to subscribers as long as our limit of space will allow.



DALL — West American Mactridæ.

36. *Thysanophora diminuta* C. B. A. Montego Bay; Mandeville; Long Mt.; Little River; Falmouth; Ramble (Hanover); Pt. Antonio; Bowden; Cave and ledge near St. Anns; Gallina Point; Pt. Antonio.

37. *Thysanophora boothiana* Pfr. Bluefields; Petersfield; Mandeville; Black River; St. Anns; Mt. Pleasant. (*T. authoniana* C. B. A. seems to be only a slightly larger and solider form of this).

38. *Thysanophora sincera* C. B. A. Port Antonio; St. Anns Bay; Ramble; Gallina Point; Montego Bay; W. of Pt. Antonio. (Seems only to be a less strongly ribbed var. of *T. diminuta*).

39. *Thysanophora peraffinis* C. B. A. Cave St. Anns; Duncan; Rio Novo; Petersfield; Buff Bay; Hope River; Pt. Antonio; Ramble; Bog Walk; Falmouth; Montego Bay; Bluefields; Bowden; Little River; Gallina Point; Ocho Rios; Spurtree Hill; Mt. Pleasant.

40. *Thysanophora perdepressa* C. B. A. Long Mt.; West of Pt. Antonio.

41. *Thysanophora turbiniformis* Pfr. Hope Bay; Gallina Point; Bog Walk; Bowden; Mandeville; Mt. Pleasant; Pt. Antonio; Duncans; Rio Novo; Spurtree Hill; Buff Bay; St. Anns; Ocho Rios; Falmouth. (Quite variable. The var. from Spurtree Hill much elevated. Those from Falmouth, Ocho Rios, St. Anns, and Rio Novo greatly depressed).

42. *Thysanophora ptychodes* Pfr. Mandeville; Bog Walk.

43. *Thysanophora immunda* C. B. A. Bluefields; Stony Hill; Bog Walk. (*T. ptychodes*, according to Adam's shells in the Natl. Museum, is considerably more depressed and sharper keeled than this species. All our material, however, of both forms is intermediate in form and it is probable that the two run together).

44. *Zaphysema macmurrayi* C. B. A. Mandeville; Petersfield (dead).

45. *Zaphysema tunicata* C. B. A. Bought.

46. *Zaphysema tenerrima* C. B. A. Bog Walk.

47. *Zaphysema columellata* C. B. A. Beach, Morant Bay; S. of Montego Bay. (*Zaphysema* is a generic name applied by Pilsbry to the Jamaican forms hitherto included in *Cysticopsis*).

48. *Helix* (*Pleurodonte*) *bainbridgei* Pfr. Bought. (*Lucerna* is now included in de Waldheim's *Pleurodonte*. See Man. Conch., (2), Vol. IX, p. 80).

49. *Helix* (*Pleurodonte*) *lucerna* Müll. St. Anns; Morant Bay; Yallahs R.

50. *Helix* (Pleurodonte) *lucerna* v. *julia* Fér. Cave, St. Anns.
51. *Helix* (Pleurodonte) *lucerna* v. *fuscolabris* C. B. A. Little River.
52. *Helix* (Pleurodonte) *acuta* Lam. (small var.). Mandeville; Bog Walk.
54. *Helix* (Pleurodonte) *acuta* v. *nobilis* C. B. A. Stony Hill.
54. *Helix* (Pleurodonte) *acuta* v. *nannodonta* Brown. Mt. Pleasant.
- 54a. *Helix* (Pleurodonte) *acuta* v. *albino*. Sav. la Mar.
55. *Helix* (Pleurodonte) *acuta* v. *lamarcki* Fér. Bluefields; Bog Walk.
56. *Helix* (Pleurodonte) *peracutissima* C. B. A. Mandeville (fine living spec.); Petersfield; Spurtree Hill (dead).
57. *Helix* (Pleurodonte) *sloaneana* Shuttl. Montego Bay. (*Helix vendrycsiana* of Cockerell, specimens of which were sent to the Natl. Museum by the author from this locality, seems to be identical with this).
58. *Helix* (Pleurodonte) *schroeteriana* Pfr. Petersfield; Mt. Pleasant.
59. *Helix* (Pleurodonte) *tridentina* Fér. Sav. la Mar. (Seems to connect with last).
60. *Helix* (Pleurodonte) *invalida* C. B. A. Stony Hill.
61. *Helix* (Pleurodonte) *bronni* Pfr. St. Anns Bay.
62. *Helix* (Pleurodonte) *sinuata* Müll. Mandeville.
63. *Helix* (Pleurodonta) *consanguinea* C. B. A. Bog Walk.
64. *Helix* (Pleurodonte) *sinuosa* Fér. Bog Walk.
65. *Helix* (Pleurodonte) *picturata* C. B. A. Sav. la Mar.
66. *Helix* (Pleurodonte) *anomala* Pfr. Bought.
67. *Helix* (Thelidomus) *aspera* Fér. Mandeville; Rio Bueno; Spurtree Hill; Mt. Pleasant; Petersfield; Bog Walk; Montego Bay.
68. *Helix* (Eurycratera) *jamaicensis* Gmel. Cave St. Anns; Bluefields; Bog Walk; Mandeville.
69. *Helix* (Thelidomus) *jamaicensis* v. *cornea* Simpson. Mandeville. (A var. without any coloring whatever, and with a corneous epidermis).
70. *Helix* (Hemitrochus) *graminicola* C. B. A. Bog Walk; Spurtree Hill; Long Mt.; Stony Hill; Mandeville.
71. *Helix* (Dialeuca) *conspersula* Pfr. Sav. la Mar, on logwood trees.

The *Dialeucas* are very variable and puzzling and none of the specimens collected exactly agree with any figures or descriptions known to the writer.

72. *Helix* (*Dialeuca*) *conspersula* v. *platystyla* Pfr. Sav. la Mar (on trees).

73. *Helix* (*Dialeuca*) *conspersula* v. *virginea* C. B. A. Mt. Pleasant (on trees).

74. *Helix* (*Dialeuca*) *subconica* C. B. A. Mandeville; Stony Hill.

75. *Helix* (*Dialeuca*) *fuscocincta* C. B. A. Bought.

76. *Helix* (*Dialeuca*) *nemoraloides* C. B. A. (?) Bog Walk.

77. *Helix* (*Dialeuca*) *blandiana* C. B. A. Buff Bay; Pt. Antonio.

78. *Helix* (*Dialeuca*) *gossei* Pfr. Hope River. (Pilsbry and others unite this with *H. subconica* C. B. A. There is a shell of the above and specimens of Adams's species in the Natl. Museum which were labelled and sent by Adams to Dr. Lea. *H. conica* is a thin shell, much more depressed and with straighter spire than this species; the last whorl is scarcely descending anteriorly, while in this species it is abrupt and strongly deflected. In *H. gossei* the outer lip is thickened and reflected, the columella is quite strong and broad. If it were found in Cuba it would be called a *Coryda*, and is suggestive of an elevated *Helix alauda*).

(To be concluded in June number.)

ON SOME SPECIES OF MULINIA FROM THE PACIFIC COAST.

BY W. H. DALL.

Mulinia modesta, n. s. (Plate I, lower fig.).

Shell rather small, ovate-triangular, thick, equilateral, covered with a lineated straw colored thin epidermis, ivory white with a few rusty flecks toward the umbones; surface smooth except for incremental lines; anterior dorsal area obscure, posterior larger, bordered by a hardly angulated ridge on which the epidermis forms a raised line, but without any marginal flexure behind the basal termination of this ridge; anterior end evenly rounded, beaks prominent, pointed rather distant, pallial sinus well marked. Lon. 42.0 alt. 31.0, diam. 24.0 mm.

Habitat, Guaymas, Sloat, in U. S. Nat. Mus.

This differs in its proportions from *M. carinulatu* Desh. to which Carpenter referred it. The latter is with little doubt merely a young specimen of *M. pallida* Sby. the *M. donaciformis* of Gray, better known as *angulata* Gray. It is a thinner shell with a sharp keel terminating in a somewhat recurved acute point, and having the beaks more anterior than *M. modesta*. The beaks are decidedly more distant in the latter.

Mulinia coloradoensis, n. s. (Plate I, upper fig.).

Shell larger, solid, rude, equilateral, resembling *M. modesta*, but having the posterior dorsal margin more arched, the base behind the posterior dorsal angle, somewhat concavely flexuous, and the surface anteriorly and on the dorsal area marked with obsolete, little elevated radii. Lon. of a medium sized specimen 49, alt. 36.5, diam. 32 mm.

Habitat, Head of the Gulf of California in the estuary of the Colorado River, abundant; Dr. E. Palmer.

M. coloradoensis var. *acuta*, n. s. (Plate I, left fig.).

Shell thinner, longer, and more flexuous posteriorly. Lon. 40, alt. 29 mm.

Habitat, with the typical form, common.

Mulinia Bradleyi, n. s. (Plate I, right fig.).

Shell resembling a miniature *M. donaciformis* but more compressed, shorter, the beaks smaller and less prominent, the posterior dorsal margin much more arched, no basal flexuosity, the pallial sinus longer and more rounded internally, and the epidermis elevated into narrow fringes, more or less regularly spaced. Lon. 32, alt. 26, diam. 15 mm.

Habitat, Panama; Bradley, in U. S. Nat. Museum.

TRIODOPSIS + MESODON.—DISTRIBUTION, ETC.

BY ROBERT E. C. STEARNS.

In the last number of the Manual (Pulmonata Series), Mr. Pilsbry very properly unites *Triodopsis* and *Mesodon*; both of these are Rafinesque's names; in order of date, the former has priority, therefore *Mesodon* must take a back seat. As to the propriety of these names, neither is satisfactory. *Triodopsis* the name that must stand for the reason above given, priority, conveys a false idea, for as Mr. Pilsbry says, in the remarks¹ that precede his list:

¹Manual of Conchology, pt. 34, pp. 74-76.

"The species enumerated below have been divided by authors into two sections, *Triodopsis* and *Mesodon*, but such division seems to be artificial. Some species of *Triodopsis* are known to have varieties lacking lip teeth, and these would technically fall into *Mesodon*. "

"In other cases, such as the group of Idaho and Washington species, all the transitions from tridentate to toothless apertures occur. The group of *P. appressa* is also a transition group. Tryon has resuscitated the section names *Xolotrema* and *Ulostoma*. The first of these is a Rafinesquian name totally unidentifiable; the second was proposed by Albers for species of *Polygyra* ss. and *Triodopsis* ss., and did not include either of the forms Tryon uses the name for! *Aplodon* Raf. has also been used in this connection; it is positively unidentifiable." Whoever has had occasion to review the points referred to by Mr. Pilsbry, cannot fail to indorse his conclusions.

Triodopsis as a name is as unsatisfactory as *Mesodon*; but there it is, and it will have to stick. *Xolotrema* and *Ulostoma* must be consigned to the waste basket; fortunately they are book names rather than names in practical use.

Touching the matter of distribution in connection with the foregoing, the farthest outpost of *Triodopsis*+*Mesodon* in the Southwest is that occupied by *T. levettei* at Fort Huachuca and Tucson, Arizona, about on the line 32° N. latitude and 111° longitude W. While Santa Fe, New Mexico, where the type described by Bland was collected, is considerably further to the north and east. At the first named place the three genera, *Arionta*, *Patula* and *Triodopsis* occur in close geographical proximity, but there are wide gaps between these localities and the west coast, and between the same localities and the nearest eastern localities of *Triodopsis*+*Mesodon*. So the more northerly line of distribution of *Triodopsis*+*Mesodon* is interrupted or discontinuous as I have pointed out elsewhere,² along the line as we proceed eastward from the Pacific Coast through the states adjoining the southerly boundary line of the Dominion of Canada, i. e. Washington, northern Idaho and Montana (according to Binney); then comes the gap between western Montana and the eastward.

Within the States above named we find *Triodopsis*+*Mesodon*, *Patula* and *Arionta* in geographical proximity as in the southerly region previously named. We find the *Triodopsis*+*Mesodon*

²Proc. U. S. Nat. Mus., Vol. XVI, pp. 749—50.

characters shading into each other in both regions though perhaps less frequently in the Atlantic Appalachian region, so that they appear to be in no way related to geographical or environmental differences or influences. Size, elevation or depression, color, sculpture, etc., are exhibited as might be supposed, in many and various facies, but the denticulation of the marginal lip of the aperture, or the presence of a tubercular callus or tooth on the parietal wall, or a tuberculoid lump or thickening at the base of the pillar, all of these last characters are inconstant and variable and are often present or absent in examples that are found in the same colony, at many if not all places, within the territory inhabited by the species of *Triodopsis*+*Mesodon* group.

In *Triodopsis levettei* from Arizona and New Mexico, as well as in *T. devia*+*Mullani* from the northerly region before indicated, "we find all the transitions from tridentate to toothless apertures occur." A comparison between 40 and 50 examples from Cœur d'Alene, Idaho, in addition to those previously contained in the National collection, indicate that *Mullani* is but a variety of *devia* as Mr. Binney has placed it³; and to quote Mr. Binney's remarks: "The variations of this species show very markedly the unsatisfactory character of our so-called genera. Here we have the typical *devia* as a *Mesodon*, though the variety is a true *Triodopsis*."

DESCRIPTIVE NOTICES OF NEW CHITONS—IV.

BY H. A. PILSBRY.

Plaxiphora Suteri, n. sp.

Shell resembling *P. biramosa* Q. and *P. superba* Cpr.; but girdle all over sparsely hairy, *without the least indication of pores or sutural bristles*. Valves smooth, with slight growth-wrinkles, the diagonal rib but slightly indicated. Ridge with a chestnut band with a stripe of green on each side of it, the pleura and lateral areas uniform blackish olive. Girdle blackish with chestnut hairs. Interior blue, fading to white on the sutural-plates. Length about 45, breadth about 25 mm.; (specimens all curled and contracted).

Timaru, Sumner and Port Lyttelton, S. Island, N. Z.; (H. Suter).

A young specimen has the earlier formed portion of each valve light brown, spotted with white. This is probably the normal coloring of the young shells.

³Manual Am. Land Shells, p. 119.

Ischnochiton elizabethensis, n. sp.

Shell small, elliptical-oblong, elevated at an angle of about 105° ; carinated, the side-slopes somewhat convex. Color whitish or buffish-olive, finely and closely mottled all over with light olive-green, or having angular patches of olive at the sides of each valve; sometimes with black-green triangles on the ridge of some valves (valves ii, iv, vii, viii); the posterior margins of valves more or less tessellated light and dark. Girdle indistinctly tessellated with numerous small green bars or patches.

Intermediate valves not beaked. Valves finely granulated throughout, *the sculpture closely resembling that of Trachydermon cinereus* L. Lateral areas slightly raised. Posterior valve having the central mucro somewhat prominent, posterior slope concave.

Interior bluish, with a pair of darker green rays in each intermediate valve; the inflected posterior margin tessellated. Sutural plates small, separated by a very wide, straight, smooth sinus. Anterior valve having 10, intermediate valves 1-1, posterior valve 11 slits; teeth smooth and sharp; slit-rays showing as whitish lines; posterior tooth in intermediate valves short, removed from the posterior margin of valve by about its own length. Eaves narrow.

Girdle densely clothed with smooth, flattened imbricating scales.

Length $10\frac{1}{2}$, breadth 7 mm.

Habitat: Port Elizabeth, S. Africa.

This little species closely resembles *Trachydermon cinereus* L. (*marginatus* auct.), or *dentiens* Gld., in sculpture and coloration, but differs from them in the totally diverse girdle-covering. I am indebted to Mr. G. B. Sowerby for specimens. It is the *Ch. marginatus* of his useful "Marine Shells of S. Africa," p. 50.

NOTICES OF NEW JAPANESE MOLLUSKS, II.

BY H. A. PILSBRY.

Siphonaria sirius n. sp.

Shell oblong, polygonal, low-conical with subcentral, erect, apex; *primary ribs all single, generally 7, strongly elevated and white; interspaces wide, dark brown, radially finely ribbed. Interior brown-black, the larger ribs indicated by white rays; Siphon occupying a single rib, never a double one. Cavity with a white callus (rarely*

chestnut colored), the region of the muscle-impression bordered with chestnut stains. Length 22, breadth 17-19, alt. 5 mm.

Sagami, and Kashiurazaki, Boshu, Japan (Frederick Stearns!)

This species differs from *S. atra* Q. & G., *coreensis* A. & R., and their allies in having the siphonal rib single and simple. It is probably the species identified as *S. atra* by Dunker and other writers on Japanese shells. Several hundred specimens collected by Mr. Stearns agree in the characters above given. Not one shows any tendency to double the siphonal rib.

Helix (*Euhadra*) *yaeyamensis* n. sp.

Shell sinistral, perspectively umbilicated, depressed, thin but rather solid, light brown with a supra-peripheral brown line. Surface irregularly wrinkle-striate and in places showing an excessively fine, superficial spiral striation. Spire low conoidal, composed of 6 convex, slowly widening whorls, the last nearly twice as wide as the preceding, a trifle descending in front, rounded at the periphery and beneath. Aperture oblique, wide lunate; peristome flesh-tinted, narrowly expanded and subreflexed, and slightly thickened within, dilated at the columellar insertion. Alt. 17, greater diam. 27½, lesser 23 mm.

Yaeyama (Okinawa) Island, Loo Choo group. (Frederick Stearns).

This species is apparently most nearly allied to the Chinese *H. latilabris* Mildff., but the umbilicus is more open, the lip narrower, aperture more oblique, etc. The umbilicus is wider and more open than in *H. quesiata*.

ISAAC LEA CHAPTER, AGASSIZ ASSOCIATION.

BY DR. M. L. LEACH, WEXFORD, MICH.

A vigorous chapter of the Agassiz Association has been in existence for several years and is known as the "Isaac Lea Conchological Chapter." Its members are scattered over this country from Maine to California, and some of them reside in Canada. The Chapter is divided into sections, each having a secretary, who has special knowledge of his department. A juvenile section has recently been added, and a goodly number of boys and girls are learning about shells. As the members are so widely separated, most of the com-

munications must be in writing. The most valuable papers consist of annual reports, which are sent to the members in turn, and are finally preserved by the general secretary. During the past years excellent work has been done by members of this Chapter, and an invitation is extended to working conchologists to apply to the secretary for membership.

The President of the Chapter is Prof. Josiah Keep, of Mills College, Cal., and the Secretary is Mrs. M. Burton Williamson, University P. O., Los Angeles Co., California.

MELONGENA CORONA Gmel.

BY FRANK A. WHITE, GEORGIANA, FLORIDA.

For many years I have seen these shells and have been sure that they were from a living mollusk, but until March 20, 1894 had never seen one alive.

On that day I went from Georgiana to Oceanus and as the river was very boisterous I went by way of the Thousand Islands. When about half a mile from my destination we all went ashore for a few minutes and there in the shoal, still water, were several pairs of *Melongena corona* apparently in the act of copulation. I very much desire to visit the station again when I have more time at my command and secure more of the shells and observe more closely their actions.

Structural and Systematic Conchology in the description says "operculum solid" but does not give material. It is horny and not very thick.

There is some variation in the living shells some having varices near anterior end of aperture, others smooth. Some time ago I found a broken shell much larger than any recent shell I have seen. The spire and part of the body whorl were gone but the aperture was intact and measured 3 inches in length including the callus of posterior canal. This seems to indicate that in "prehistoric times" these mollusks attained a much greater size than at the present time.

I neglected to say in the proper place that the living shells were in the Banana river in brackish water.

NOTES AND NEWS.

MR. EDWARD W. ROPER has returned from a two months trip to Jamaica. He reports a good time and considerable collecting.

PURPURA SAXICOLA VAL.—A large suite of this species recently presented to the collection of the American Association of Conchologists by MR. WILLIARD M. WOOD, shows an extraordinary amount of variation. Some very large examples are represented, the largest measuring 34 mm. alt. Others show variations from smooth to strongly corded. In color they vary from livid-white or gray; white to bright orange and to black, some being spirally banded with brown in the intervals between the white spiral riblets. The entire lot was collected in San Francisco County, Cal.

MR. FREDERICK STEARNS of Detroit, is in Philadelphia, working upon the literature of Japanese mollusks.

A. B. KENDIG, D. D., has removed from East Orange, N. J., to 2190 Seventh Ave., New York City.

OBITUARY.

MRS. D. L. GARLICK expired suddenly March 16, 1894, in San Francisco. She was spending the winter in Alameda, as the guest of her sister, Mrs. Gaylord, 2116 Central Avenue, and the two ladies went out to the Cliff House and vicinity yesterday to spend the day collecting shells.

They climbed a precipitous height near Land's End station on the line of the Ferries and Cliff House Railroad, and when she reached a little station on the road, they sat down for a rest. Suddenly Mrs. Garlick fell forward and dropped on the floor. Upon trying to raise her up, Mrs. Gaylord was horrified to see that her sister was dead.

Weakness of the heart, aggravated by over exertion, is attributed as the cause of death.

The home of the deceased was at St. Paul, Minn., and she made it a practice for many years to spend the winters in California, either in Alameda or San Diego. She had been interested in the collection of shells for some years.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

EDITOR :

H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

ASSOCIATE EDITOR :

C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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THE NAUTILUS.

VOL. VIII.

JUNE, 1894.

No. 2

UROSALPINX CINEREUS IN SAN FRANCISCO BAY.

ROBT. E. C. STEARNS.

The Report of the U. S. Commissioner of Fish and Fisheries 1889-91 just published (March, 1893), contains an interesting and valuable paper by Mr. Charles H. Townsend of the *Albatross* on "The Oyster Resources and Oyster Fishery of the Pacific Coast," etc., etc., in which he mentions the occurrence of *Urosalpinx cinereus* (= *Fusus cinereus* Say) on the beds of transplanted Eastern oysters near Belmont. It appears that this species, the "drill" of the oystermen, "has not become troublesome until very recently, and even now is abundant only in the southern part of the Bay.

* * * * *

"At the Belmont beds I had no difficulty in gathering a quart of these mollusks, in less than ten minutes, by merely turning over the large oysters when the water had receded from the beds.

* * * * *

"This destructive animal may have been introduced much earlier than the oyster-men suppose, as a few individuals accidentally imported among the original oysters would require several years to increase to the present numbers." They had not at the time of Mr. Townsend's investigation, been detected on the oyster beds at Millbrae, which are much nearer the sea.

This is the second form that has incidentally been introduced with the oysters from the Atlantic seaboard, *Mya arenaria* being the first; the latter has already become abundant, and therefore a val-

nable addition to the food supply of the West Coast. It seems strange that some of the conchologists or collectors should not have detected the *Urosalpinx* before; for while, no doubt it multiplies rapidly under favorable conditions, still the abundance of this form as shown by Mr. Townsend's investigation, indicates that it must have been on the Belmont beds for several years. The common *Purpura* of the coast, *P. crispata* has heretofore been found in considerable numbers on some of the oyster beds in San Francisco Bay. How it compares with the *drill*, as an oyster borer and pest to the oyster men, I have not learned.

We may reasonably look forward to the finding of a third eastern species, as an accidental or incidental transplantation; it may be already established there, in some of the beds of eastern oysters. I refer to the ribbed *Mytilus*, *M. hamatus* Say, which is so frequently met with here, attached to *Ostrea virginica*. Mr. Townsend or some of the local naturalists, should look after it—if not there *now*, it will be sooner or later.

Washington, D. C., March, 1894.

A FEW NOTES ON *HELIX APPRESSA*.

BY A. G. WETHERLY.

In the April NAUTILUS, Mr. Pilsbry has given us his description of *Triodopsis appressa*, and named a variety thereof, *perigrapta*. As I am at war in a good humored way, with the modern habit of designating the hundreds of varieties of our land shells by latin names, I hope to make my reasons plain in the following brief note. Referring to, but not copying Pilsbry's description of *perigrapta*, I will say that I have shells in my collection exhibiting every gradation of the sculpture in question, from a few "spiral incised lines" in specimens from Cherokee Co., N. C., to those in which these lines are not only crowded, but much more pronounced individually; and as these specimens are heavily ribbed, they aid in giving some parts of the surface of the shell a beaded appearance.

Every gradation may be traced in the specimens which I have, from the smooth albino form found at Cincinnati, Ohio, to those rough mountaineers from Morrowville, Tenn. Where then, does

perigrapta begin and where does it stop? Any of these varieties is just as much entitled to name as is the one selected for this honor. Among the rest is a large var., 23 mm., from Lookout Mt., Tenn. This variety is almost smooth or very sparingly costate. It is slightly wrinkled like *Z. inornatus*. But it is crowded with these incised lines *above and below*!

Another form that I collected at Gasper, Picking Co., Ga., in August, '83, is very costate, and has the incised lines very much crowded and developed. The Lookout shells have the parietal tooth long, curving, and joining the columellar callus in the umbilical region. The Gasper specimens have this tooth short and very erect. They also have the lip very much widened, and the spire elevated. I have, in my suite of this species, four shells, taken at random from a lot collected at Murphy, Cherokee Co., N. C., *in every one of which the upper tooth is well indicated*, the parietal tooth is short and erect, the spire elevated, the body whorl obtusely carinate and the whole surface above and below is crowded with "microscopic spiral incised lines." Now which is *perigrapta*? The deep costæ and the multitude of spiral incised lines roughen the epidermis of the Morrowville examples and begin to introduce the conditions attaining in *subpallata*. These shells, in consequence, have a somewhat dull appearance, while the Lookout Mt. and Cherokee Co. specimens are highly polished.

A variety from Braden Mt., Tenn., is heavily costate, and has the spiral lines (as has every shell of *appressa*) but not "incised." These shells range from 12 mm. to 25 mm. (my largest specimen of *sargentiana*). This last form is costate, has the erect tooth, the carinate body whorl, and the spiral lines, not "incised," and is in fact nearer to the typical *appressa*, in every aspect, than the highly polished and shining specimens from N. C.

Now what is the philosophic method in treating such a problem? Is it to give all these varieties names, loading up our literature and check lists with trinominal designation for varieties that differ in the same County of the same State? Or shall we write our labels *appressa* var. with *locus* and so on to the end? There is at least one collection in the U. S. where the latter method prevails and will to the end. I am tempted, in this place, to prune and reset Mr. Pilsbry's phylogenic tree according to my ideas, but I will not take space for so doing now. I do not, however, believe that *dentifera* is the root or that the branches *sargentiana*, *appressa* and *perigrapta*

are of equal specific rank, or that two of them are of any specific rank whatever; and I base my statement not only upon the varieties of this species here briefly mentioned, but upon many others in my collection, from many States and mostly collected by myself.¹

Why do we not take to our heart of hearts the great truth that there are no hard and fast lines in Nature's record either present or past, and hold close the splendid proof given by this shell?

The foreign student who has not seen all our shells can tell nothing by these names, but if he knows *appressa* he will have the truth suggested by *appressa*, etc. So, too, our catalogues will be something besides names and *nobis*! They will be expressive of facts in the life history of this humble race.

This is the method that appeals to me as the scientific, the truthful, the suggestive method; and I shall never cease to believe in it and to work for it.

NOTICES OF NEW JAPANESE MOLLUSKS, III.

BY H. A. PILSBRY.

Siphonaria acmæoides n. sp.

Shell oblong, nearly equilateral, but with excentric apex like *S. radiata* A. & R. (Zool. Samarang pl. 13, fig. 2). The even surface hardly modified by the 9-16 low, wide ribs, between which it is very finely radially striated. Siphonal rib wide but low and inconspicuous. Apex spiral, bent down and appressed. Interior blackish or chestnut within the muscle impression, outside of which it is radially striped black and white, the siphonal channel extremely shallow and inconspicuous. Color outside whitish-buff, speckled and maculated with brown, or whitish on the principal ribs, the intervals black-brown. Length $12\frac{3}{4}$, breadth $9\frac{1}{2}$, alt. $3\frac{1}{2}$ mm.

Prov. Boshu, Japan (Frederick Stearns).

This little species very closely resembles *Acmaea Heroldi* in the general form and the coloration of the interior.

¹ Mr. Pilsbry intended *appressa*, not *dentifera* for the root, in his diagram. The "tree" is seen from above, not from the side.—ED.

PEROSTYLUS, A NEW GENUS OF FUSOID GASTROPOD.

BY H. A. PILSBRY.

In volume IX of the Manual of Conchology, Mr. Tryon described and figured a shell from Port Darwin, N. Australia, as *Cerithium* (*Colina*) *Brazieri*. Having occasion recently to study a large number of *C. macrostoma* Hinds, the type of the subgenus *Colina*, I was at once struck by the notable difference between this species and *C. Brazieri*. The latter does not seem to belong to the *Cerithiidae* at all, much less to the group *Colina*. I am more inclined to view it as an aberrant type of the *Fusidae*, although only a knowledge of the operculum and dentition can decide the question. The new group may be thus diagnosed :

PEROSTYLUS n. g. *Gen. Char.*: Shell cylindrical or pillar-shaped, thin, with decollated apex like that of a *Rumina* or *Cylindrella*; last whorl but little wider than the spire; aperture small, shaped like that of *Fusus* or *Chrysodomus* (*Sipho*), produced in an open canal below; columella straight or sinuous, without folds; outer lip thin and fragile. Type *Cerithium* (*Colina*) *Brazieri* Tryon.

The decollation of the spire is not the result of erosion, as in the species of *Potamides* and *Melaniidae*, nor is the apex filled with a thick solid mass of shell-tissue as in those groups. In *Perostylus* the structure is like that of *Rumina decollata* or the West Indian *Cylindrellas*.

The genus will consist for the present of two species.

P. Brazieri Tryon.

Shell cylindrical, white, fragile, hardly tapering, consisting of $6\frac{1}{2}$ remaining whorls, each carinated and obtusely nodulous in the middle, and obsoletely spirally lirate. Last whorl with one or two spiral cords below the peripheral keel, and more distinctly spirally lirate, the base nearly smooth. Aperture one-third the length of the shell; outer lip thin and fragile, columellar lip distinctly sigmoid, smooth. Alt 21, diam.

6 mm.

Habitat, Port Darwin, N. Australia (John Brazier).

If this shell could be reproduced in the form it would have were the earlier whorls not decollated, it would be by all odds the most attenuated Gastropod known, surpassing even the *Terebras* in the number of its slowly increasing whorls. The numerous young shells



before me fully support this opinion. Unfortunately none of them are young enough to show the apex. The youngest of them, although not half the diameter of the adult, show the same almost imperceptible degree of tapering.

P. Fordianus Pilsbry.



Shell cylindrical, white, thin; spire hardly tapering, but last whorl notably wider. Remaining whorls $4\frac{1}{2}$, sculptured as in the last species, but the next-to-the-last whorl is distinctly narrower than the preceding whorl. Aperture nearly one-half the length of the shell; outer lip thin, simple; columella straight, a trifle deflected toward the left below. Alt. 19, diam. $7\frac{1}{2}$ mm.

Habitat unknown. The specimens were presented to the Academy by Mr. John Ford.

This species is distinguished from the preceding by its straight, not sigmoid columella, and by the fewer remaining whorls. As the last character might possibly be the result of greater age, I do not now attach much importance to it, although it will probably prove to be a constant specific feature.

SOUTHERN SHELLS IN MISSOURI.

BY F. A. SAMPSON, SEDALIA, MO.

In the March *Nautilus* there is a reference to *Helicina orbiculata* having been collected in Stone county, Missouri, "probably near its northern limits." I have it in my collection from three other counties in Missouri: Jasper, Barry, and Macdonald, all of them being near the southern line of the state.

Of some other southern species I have specimens from places further north, a list of which is here given:

Bulimulus dealbatus Say, from the counties of Macdonald, Barry, Douglas, Camden and Cooper, the two latter being in the central part of the state.

Polygyra triodontoides Bland, from Barry.

P. jacksoni Bland, from Jasper, Barry, Macdonald, Dade and Camden.

P. dorfeuilliana Lea, from Howell and Douglas.

P. sampsoni Weth., from Macdonald, Jasper, Barry, Camden and Benton the latter being in Central Missouri.

P. leporina Gld., from Barry, Butler and Cape Girardeau.

Stenotrema labrosum Bland, from Macdonald, Barry, Jasper, Dade and Greene.

Triodopsis vultuosa Gould, from Macdonald, Dade and Pettis, the latter being in Central Missouri.

Mesodon divestus Gould, from Barry, Jasper and Dade.

M. andrewsi W. G. B., from St. Francois.

LIST OF SHELLS COLLECTED IN JAMAICA.

BY J. B. HENDERSON, JR.

Second paper: Orthalicidæ, Cyliindrellidæ, Pupidæ, Operculata.

78. *Bulimulus immaculatus* Rve. Long Mt.; S. of Pt. Maria.

79. *Orthalicus undatus* Brug. E. of Kingston, on trees. Hope River (dark var.).

80. *Cylindrella montana* C. B. A. Bought.

81. *Cylindrella columna* C. B. A. Bog Walk (?).

82. *Cylindrella striata* Chitty (?). St. Anns.

83. *Cylindrella ovata* Desh. (?). St. Anns.

84. *Cylindrella cylindra* Chem. Stony Hill.

85. *Cylindrella sanguinea* Pfr. Bog Walk.

86. *Cylindrella brevis* Pfr. Long Mt.; Ocho Rios; Hope River Rockfort.

87. *Cylindrella brevis* v. *intermedia* C. B. A. Hope River.

88. *Cylindrella obesa* C. B. A. Falmouth.

89. *Cylindrella columna* C. B. A. Rockfort.

90. *Cylindrella gravesi* C. B. A. Montego Bay; Little River; Bluefields.

91. *Cylindrella bacquieana* Chitty (?). Cave, Pt. Antonio.

92. *Cylindrella nobilior* C. B. A. Bog Walk.

93. *Cylindrella aspera* C. B. A. Yallahs River.

94. *Cylindrella rosea* Pfr. Mandeville.

95. *Cylindrella rosea* v. *fortis* C. B. A. Spurtree Hill.

96. *Cylindrella rubra* C. B. A. Bog Walk.

97. *Cylindrella tenella* C. B. A. Falmouth; Little River; Ocho Rios; Bog Walk; St. Anns; Gallina Point; Montego Bay.

98. *Cylindrella alba* C. B. A. N. of St. la Mar.
99. *Cylindrella inornata* C. B. A. Mandeville (dead).
100. *Cylindrella seminuda* C. B. A. Bog Walk ; Long Mt.
101. *Cylindrella robertsi* C. B. Ad. Ocho Rios ; Montego Bay ;
Stony Hill.
102. *Cylindrella elongata* Chem. Bog Walk ; Stony Hill.
103. *Cylindrella gracilis* Wood. Mandeville.
104. *Lia maugeri* Wood. Bog Walk. Bought.
105. *Macroceramus gossei* Pfr. Spurtree Hill.
106. *Pupa servilis* Gould. Hope River ; W. of Pt. Antonio.
107. *Pupa tenuidens* C. B. A. W. of Pt. Antonio.
108. *Pupa jamaicensis* C. B. A. Falmouth ; Rockfort.
109. *Pupa grevillea* Chitty. W. of Pt. Antonio.
110. *Pupa jardineana* Chitty. W. of Pt. Antonio.
111. *Pupa lata* C. B. A. W. of Pt. Antonio.
112. *Stenogyra* (Opeas) *pauperculus* C. B. A. W. of Pt. Antonio ; Mt. Pleasant.
113. *Stenogyra* (Opeas) *terebella* C. B. A. St. Anns ; Long Mt. ; Falmouth ; Black River ; Bog Walk ; Gallina Point ; Montego Bay.
114. *Stenogyra* (Opeas) *striosa* C. B. A. Rockfort ; Montego Bay ; Black River ; Bog Walk ; Duncans ; Pt. Antonio ; Mt. Pleasant ; Bowden ; Bluefields ; Long Mt. ; Ocho Rios ; St Anns ; Gallina Point ; Hope River.
115. *Stenogyra* (Subulina) *octona* Chem. St. Anns ; Pt. Maria ; Pt. Antonio ; Kingston ; Hope Bay ; Gallina Point ; Buff Bay ; Bowden ; Mandeville ; Mt. Pleasant ; Bluefields ; Remble ; Petersfield ; Bog Walk ; Stony Hill ; Long Mt. ; Annotha Bay ; Ocho Rios.
116. *Stenogyra* (Subulina) *octonoides* Chem. Pt. Antonio ; Bog Walk ; Black River ; Mandeville ; Gallina Point ; Montego Bay.
117. *Stenogyra* (Spiraxis) *solitaria* C. B. A. Long Mt. ; Montego Bay.
118. *Stenogyra* (Spiraxis) *pellucens* C. B. A. Bog Walk ; Ocho Rios ; Rio Novo ; Hope River ; Annotha Bay.
119. *Stenogyra* (Spiraxis) *aberrans* Pfr. Cave, St. Anns.
120. *Stenogyra* (Spiraxis) *subula* Pfr. Spurtree Hill ; Mandeville ; Bog Walk ; Stony Hill.
121. *Stenogyra* (Leptinaria) *pallida* C. B. A. Bog Walk ; Montego Bay ; Pt. Antonio ; Mandeville ; Ocho Rios.

122. *Geostilbia iota* C. B. A. W. of Pt. Antonio.

123. *Succinea sagra* d'Orb. Montego Bay ; Pt. Antonio ; Bog Walk ; Bowden ; Rio Novo ; Buff Bay ; Gallina Point ; Pt. Maria ; Petersfield ; Mandeville ; Bluefields.

124. *Succinea contorta* C. B. A. Bowden ; Bluefields.

125. *Succinea angustior* C. B. A. Montego Bay ; St. Anns ; Petersfield.

126. *Succinea latior* C. B. A. Pt. Antonio ; Montego Bay ; Mt. Pleasant ; Gallina Point ; Bowden ; Mandeville ; Rio Novo ; Pt. Maria ; St. Anns ; Bog Walk ; Black River.

(I believe all these *Succineas* to be one species).

127. *Veronicella occidentalis* Gldg. Pt. Antonio.

128. *Veronicella sloanei* Cuvier. Mandeville.

129. *Carychium exilis* C. B. A. Petersfield ; St. Anns ; Pt. Antonio.

130. *Geomelania beardsleyana* C. B. A. Bog Walk.

131. *Geomelania minor* C. B. A. Mandeville.

132. *Geomelania fortis* C. B. A. Mandeville.

133. *Geomelania procera* C. B. A. Pt. Antonio ; Bowden.

134. *Geomelania jamaicensis* Pfr. Petersfield.

135. *Geomelania pygmaea* C. B. A. Rio Novo.

136. *Geomelania vicina* C. B. A. Black River.

137. *Geomelania pauperata* C. B. A. Montego Bay.

138. *Geomelania affinis* C. B. A. (?). Kingston.

139. *Truncatella pulchella* Pfr. Rockfort.

(In fresh water pool with *Planorbis decipiens*! This pool is by the roadside, the water slowly oozing out of a cut in the hill. A few above and a short distance from Kingston Harbor).

140. *Truncatella scalarina* Mich. Little River, on stones at low tide.

141. *Truncatella succinea* C. B. A. St. Anns ; Petersfield, on mountain with hermit crabs, 9 miles from the sea ; Ocho Rios.

142. *Neocyclotus dubiosum* C. B. A. Montego Bay ; Falmouth.

("Neocyclotus" has been applied by Crosse and Fischer to the American forms of *Cyclotus*. The group of species with corrugated shells peculiar to Jamaica is placed by them in the subgenus *Platystoma*).

143. *Neocyclotus* (*Platystoma*) *portlandiensis* Chitty. Pt. Antonio.

144. *Neocyclotus* (*Platystoma*) *semi-nudus* C. B. A. Bog Walk.

145. *Neocyclotus* (*Platystoma*) *varians* C. B. A. Mandeville; Petersfield.

146. *Neocyclotus* (*Platystoma*) *varians* v. "a" Chitty. Bog Walk.

147. *Neocyclotus* (*Platystoma*) *jamaicensis* Chem. Petersfield; Mt. Pleasant; Mandeville; Bog Walk.

148. *Neocyclotus* (*Platystoma*) *subrugosus* Sby. Mandeville; St. Anns: Hope River; Sat. la Mar.

149. *Neocyclotus* (*Platystoma*) *rupis-fontis* Chitty. Mandeville.

150. *Neocyclotus* (*Platystoma*) *corrugatus* Pfr. Mandeville; Spurtree Hill.

151. *Neocyclotus* (*Platystoma*) *crassus* C. B. A. Black River; Mandeville; Montego Bay: Sat. la Mar; Mt. Pleasant.

152. *Neocyclotus* (*Platystoma*) *pretiosus* Chitty. Bog Walk; Rio Novo.

153. *Neocyclotus* (*Platystoma*) *ruber* Chitty. St. Anns Bay.

154. *Neocyclotus* (*Platystoma*) *jugosus* C. B. A. Sat. la Mar.

155. *Neocyclotus* (*Platystoma*) *jugosus* v. *ruflabris* C. B. A. Bought.

156. *Neocyclotus* (*Platystoma*) *corrugatissimus* Chitty. Ocho Rios.

157. *Neocyclotus* (*Platystoma*) *biswichi* Chitty. Bluefields.

158. *Neocyclotus* (*Platystoma*) *corrugator* Chitty. Gallina Pt.; Duncans.

159. *Neocyclotus* (*Platystoma*) *gemma* Chitty. Petersfield; Montego Bay.

160. *Neocyclotus* (*Platystoma*) *granulatus* Chitty (MS). Gallina Point.

161. *Neocyclotus* (*Platystoma*) *nova-spei* Chitty. Rio Novo.

162. *Neocyclotus* (*Platystoma*) *zig-zag* Chitty. Montego Bay.

163. *Neocyclotus* (*Platystoma*) *annotator* Chitty. Gallina Pt.

164. *Neocyclotus* (*Platystoma*) *sp.* Bluefields.

(There is a remarkable resemblance between the shells of this group, but a great diversity in the sculpture of the opercula which furnishes good specific characters).

165. *Choanopoma* *fimbriatulum* Sby. Mandeville.

166. *Choanopoma* *lencina* L. Bog Walk.

167. *Choanopoma* *interruptum* Lam. Mona House, Long Mt.

168. *Adamsiella* *variabilis* C. B. A. Bluefields.

169. *Adamsiella* *mirabilis* Wood. Montego Bay.

170. *Adamsiella pulchra* C. B. A. Gallina Point ; Rio Novo.

171. *Adamsiella grayana* Pfr. Stony Hill ; Bog Walk.

172. *Adamsiella grayana* v. *aureo-labris* Simpson. Rio Novo.

(These differ from the type in being less elevated, smoother and somewhat shining, in having a larger umbilicus ; and in the aperture, which has the inner lip slightly or often not at all developed, and the outer smooth and reflexed, the whole a bright reddish orange. The outer lip of the type is little reflexed and generally lamellar, the border is usually straight at its upper part ; in the var. it is invariably bent back. Were this not such a variable species, Mr. Simpson thinks it should receive a specific name).

173. *Tudora columna* Wood. Bog Walk.

=*quinquefasciatum* C. B. A.

174. *Tudora armata* C. B. A. Rochfort.

175. *Tudora fecunda* C. B. A. Hope River ; Long Mt. ; Stony Hill.

176. *Tudora proxima* C. B. A. Bog Walk ; Mandeville ; Pt. Maria.

177. *Tudora angustae* C. B. A. Bowden ; Hope River ; St. Anns ; Ocho Rios.

178. *Tudora angustae* v. *rufilabre* C. B. A. Near Ocho Rios.

179. *Tudora fascia* Wood. Gallina Point ; Buff Bay ; Pt. Antonio ; Hope Bay ; Little River.

180. *Tudora crenulosum* C. B. A. Spurtree Hill ; Bluefields.

181. *Tudora aurora* C. B. A. Gallina Point ; St. Anns.

=*maritima*?

182. *Tudora maritima* C. B. A. Rio Novo ; Ocho Rios ; Cave, St. Anns.

183. *Tudora adamsi* Pfr. St. Anns ; Gallina Point ; Falmouth, near Long Bay.

184. *Tudora vilkinsoni* C. B. A. Bluefields.

185. *Tudora shepardiana* C. B. A. Mt. Pleasant.

186. *Colobostylus jayanus* C. B. A. Mandeville ; Bog Walk.

187. *Colobostylus jayanus* var. Bought.

188. *Colobostylus albus* Lam. Gallina Point ; Rio Novo ; St. Anns ; Buff Bay.

189. *Colobostylus albus* v. *fuscus* C. B. A. Rio Novo.

190. *Colobostylus tectilabris* C. B. A. Spurtree Hill ; Mandeville.

191. *Colobostylus redfieldianus* C. B. A. Bog Walk ; Bluefields ; Kings ; Mt. Pleasant ; Montego Bay ; Black River.

192. *Colobostylus bauhsianus* Sby. Mandeville.

=*hyacinthimum* C. B. A.

193. *Colobostylus chevalieri* C. B. A. Little River.

194. *Colobostylus chevalieri* v. *albus* C. B. A. Montego Bay.

195. *Colobostylus chevalieri virgatus* C. B. A. Little River.

196. *Colobostylus lamellosus* C. B. A. Near Little River.

197. *Colobostylus bronni* C. B. A. E. of St. Anns; Falmouth; Little River; Ocho Rios; on stone walls in the sunshine at Montego Bay.

(One specimen from Mt. Pleasant that differs slightly from the others, but hardly specifically).

198. *Colobostylus yallahensis* C. B. A. (?). Duncans (in Portland): E. of St. Anns.

(Agrees with Reeve's figure in Conc. Icon., Vol. XIII, pl. 13, but hardly with Adams' description. If it is not this it must be a new species).

199. *Helicina neritella* Gray. Montego Bay; Bluefields; Mt. Pleasant; Petersfield; Pt. Maria; Annotta Bay; Mandeville; Pt. Antonio; Stony Hill; Buff Bay; Bog Walk; Sav. la Mar.

200. *Helicina neritella* var. (banded) (new?) Bog Walk.

201. *Helicina jamaicensis* Sby. Mandeville.

202. *Helicina aurantia* Gray. St. Anns; Montego Bay.

(To be Continued.)

NOTES AND NEWS.

VARIATIONS DUE TO STATION IN *POLYGYRA* (*STENOTREMA*) *HIRSUTA* Say.—Having read your "Descriptive Notes on Certain Forms of Polygyra" in the April "NAUTILUS," I take the liberty of sending you two forms of *P. hirsuta* Say that I have found in this County. The first measures 8 mm. in diameter, is very common on low ground, in some places being the most plentiful species of *Helix* found, while the second form, 6 mm. diam., I have only found on one high, and dry hill, clear up at the top, among moss and stones, where the Trailing Arbutus (*Epigæa repens*) and Wintergreen grow. I think you will find No. 2 alive, as I only collected them last Sunday. Under the microscope you will see that while No. 1 has "sharp, rigid hairs" those of No. 2 are curved or hooked. It also seems to me that there is a noticeable difference in the "notch."—*Geo. H. Clapp, Pittsburgh, Pa., April 3, 1894.*

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2, 214.

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DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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THE NAUTILUS.

VOL. VIII.

JULY, 1894.

No. 3

SYNOPSIS OF THE MACTRIDÆ OF NORTH AMERICA.

BY WM. H. DALL.

In revising the group of *Mastracea* with the intention of working up the Tertiary species of North America it became necessary to go over the whole of the recent species and enquire into their synonymy. The following lists of east and west American species seem likely to be useful to students, as the synonymy of the group has been in a confused state hitherto. The distinctions between the different types of *Mastridæ* have hitherto largely been lost sight of, owing to the practice of confounding all together under one or two generic names; and while, to those habituated to previous methods, the present arrangement may at first sight seem excessively subdivided, I have found, in going over the whole group of *Mastracea* in the National Collection, that features of geographical distribution and characters of importance in the development of the family in time, are brought out by it in a way which was wholly impossible by earlier methods. The present subdivision compared with that of most other groups of mollusks at the present time is not excessive, and by those who may be led to a close and accurate study of the mollusks in question hereafter I believe it will be found to be useful and convenient.

I. Synopsis of the *Mastridæ* of the Eastern coast of the United States.

Subfamily MACTRINÆ.

Genus **MACTRA** (L.) Lam., 1799.(+ *Crassatella* [*cygnea*] Lam., 1799); Type *M. stultorum* L.*Mactra* *Richmondi* Dall. Greytown, Nicaragua.Subgenus **MACTRELLA** Gray, 1853.(+ *Papyrina* Mörch, 1853); Type :*Mactra* (*Mactrella*) *alata* Spengler, 1802. Porto Rico to Brazil.=*M. carinata* Lam., 1818; + *M. striatula* Auct. non L.Subgenus **MACTROTOMA** Dall.(=*Standella* Cpr. ex parte, non Gray; *Spissula* Mörch non Gray).

Anterior left lateral tooth bidentate, right ventral tooth tridentate. Type :

Mactra (*Mactrotoma*) *fragilis* Gmelin, 1792. Hatteras to Rio Janeiro.=*M. dealbata* Pult. 1803; + *M. brasiliانا* Lam., 1818; + *M. oblonga* Say, 1822; + *M. ovalina* (Lam.?) Auct.; + *M. oblongata* Ravenel, 1834; + *M. bilineata* (C. B. Ads.) Reeve, 1854; + *M. sili-cula* Reeve non Desh. (?) 1854; + *M. ambigua* Weink. (?); + *M. anserina* Guppy, 1875. Not *Spisula fragilis* Gray, 1838.Genus **SPISULA** Gray, 1838.(=*Spissula* Phil., 1847, not Mörch, 1853; + *Spizula* Conr., 1868; + *Spisulina* Fischer, 1887). Type *Mactra solida* L., Gray, 1847.Subgenus **HEMIMACTRA** Swainson, 1840.*Spisula* (*Hemimactra*) *solidissima* Dillwyn., 1817. Labrador to Virginia.=*M. gigantea* Lam., 1818; + *M. procera* Sol., mss.; + *M. Sayi* Gray, 1838.*S.* (*Hemimactra*) *solidissima* var. *similis* Say, 1822. Rhode Id. to St. Thomas, W. Indies.=*M. Raveneli* Conr., 1831; not *M. similis* Gray, 1828.Section *Mactromeris* Conrad, 1868.*Spisula* (*Hemimactra*) *polynyma* Stimpson, 1860. Hudson Bay to Cape Ann, Mass=*M. ovalis* Gld., 1840, not J. Sowerby, 1817; + *M. ponderosa* Phil., 1844, not Eichw. nor Conr., 1830; + *M. grandis* Desh., 1830, not Gmel., 1788; + *M. similis* Gray, 1828, not Say, 1822; + *M. Grayana* Schrenck, 1867.

Genus **MULINIA** Gray, 1838.Type *M. typica* Gray (= *M. edulis* King).(=*Moulinea* Phil., 1853, + *Muline* Conr., 1867.)**Mulinia lateralis** Say, 1822. New Brunswick to the West Indies.=*Mactra subtruncata* Greene, 1833; not Da Costa, 1788.**Mulinia lateralis** var. *corbuloides* Deshayes, 1854. Mostly southern.=*Mactra rostrata* Phil., 1848, not Spengler, 1802.**Mulinia guadelupensis** Recluz, 1852. West Indies.=*Mactra cantrainei* Reeve, 1854; + *M. portoricensis* Shuttlew., 1856; + *M. donaciformis* Auct. non Gray; + *M. tumida* and *turgida* Guppy, non Gmelin.Genus **GNATHODON** Gray, 1831.Type *G. cuneatus* Gray, 1831.(=*Rangia* Desm., 1832, + *Clathrodon* Conrad, 1833; + *Perisodon* Conrad, 1863; + *Columbia* Blainville, mss., 1834.)**Gnathodon cuneatus** Gray, 1831. Gulf of Mexico.=*Rangia cyrenoides* Desm., 1832.**Gnathodon cuneatus** var. *nasutus* Dall, 1894. Texas.Subgenus **RANGIANELLA** Conrad, 1863.**Gnathodon flexuosus** Conrad, 1839. Gulf of Mexico.=*G. rostratus* Petit, 1853.**Gnathodon flexuosus** var. *Petitianus* Dall, 1894. Mexico.Genus **LABIOSA** (Schmidt) Möller, 1832.Type *Mactra anatina* Spengler, 1802.(=*Anatina* Schumacher, 1817, non Lamarek, 1809, + *Cypricia* Gray, 1840; + *Leucoparia* Mayer, 1867.)**Labiosa lineata** Say, 1822. New Jersey to San Paulo, Brazil.=*Mactra nuttallii* Reeve, 1854, non Conrad; + *M. recurva* Gray, 1828; + *M. papyracea* Auct. non Lamarek.Subgenus **RAETA** Gray, 1853.Type *L. canaliculata* Say, 1822.(=*Cryptodon* H. & A. Adams, not of Turton or Conrad, + *Lovel-
lia* Mayer, 1867.)

Labiosa (Raeta) canaliculata Say, 1822. New Jersey to southern Brazil.

= *Mactra campechensis* Gray, 1828.

Doubtful or spurious East American species.

Mactra nucleus Conr., 1831, from "New Jersey" is exotic, and stated by Tryon in the Am. Marine Conchology to be a native of Manila.

Mactrella (Harvella) elegans Sowerby, has been reported from "Florida" where it is unknown, and "Jamaica" probably by a misidentification. There is no specific difference between Panama and alleged Antillean specimens and the name cannot be admitted to the East American list without further evidence.

Spisula subtruncata Da Costa. What appears to be a somewhat deformed subfossil valve of this species was sent from Lawlor's Lake, New Brunswick, to Dr. Stimpson by Matthews, many years ago. It is in the National Collection but no other specimen seems to have been collected on this side of the Atlantic and it is probably a ballast shell.

Spisula solidissima var. *Acadica* Matthews; Can. Nat. viii, no. 2, p. 111, 1877, from the higher clays beds at St. Johns, N. B. See also Ann. Soc. Mal. de Belgique ix, 1874. This may be founded on the specimen of *S. subtruncata* above mentioned, though Mr. Matthews' paper is not sufficiently explicit to determine. It is probably an exotic as he suggests.

Spisula "subimbricata Mont." Cockerell, in list of Jamaica shells, Nautilus, vii, p. 115, 1894. Montagu described no *Mactra* of this name. What the shell intended may be, is of course impossible to say, but possibly the following:

Mactra Richmondi n. s. Shell thin, small, white, inequilateral, with the posterior end shorter and its dorsal aspect obtusely keeled; surface nearly smooth, except the dorsal areas, which have short deep concentric grooves; beaks moderate, adjacent; lateral teeth rather short and small, smooth; pallial sinus small, rounded, extending forward to the vertical of the beaks; posterior end obtusely pointed. Longitude 21; alt. 14; semi-diameter 4.5 mm.

One valve on the beach at Greytown, Nicaragua; Chas. Richmond. It is the only American species belonging to typical *Mactra* with grooved dorsal areas.

Mactra Cumingiana "Bush," Zool. Rec., 1885, from Cape Hatteras, is a *lapsus* of the Recorder for *Mactra Cumingiana*.

HELIX (ARIONTA) COLORADOENSIS:—A NEW LOCALITY.

ROBT. E. C. STEARNS.

This form first detected by Dr. C. H. Merriam¹ in the Grand Cañon of the Colorado, opposite the Kabab plateau, at an elevation of 3500 feet, in 1890, and subsequently near Resting Springs² in the southeastern part of Inyo County, California, at an elevation of 900 feet above the Springs, in February, 1891 by Mr. Vernon Bailey has recently (March of the present year) been obtained by Mr. C. R. Orcutt of San Diego, at Mountain Springs, Colorado desert, San Diego County. Mr. Bailey found his specimens among rocks on a dry hill: Orcutt found but one example a bleached shell with the band barely discernable. With these three points in mind it will be seen, that a wide range of distribution is already indicated for this species.

NOTICES OF NEW JAPANESE MOLLUSKS, IV.

BY H. A. PILSBRY.

Macroschisma Lischkei n. sp.

Nemoto, Boshu (Stearns).

Shell oblong, *the length less than twice the breadth*; lateral margins convex, anterior margin well rounded, posterior margin bluntly rounded, subtruncate. Anterior slope straight, *decidedly less than half the length of the shell*; side slopes straight.

Surface sculptured with fine radial striæ, alternately larger and smaller, finer on the forward half of the side slopes; slightly decussated by growth lines. Color either (1) uniform black, or (2) closely speckled with black on a buff ground, or (3) crimson with or without dusky rays. *Posterior slope long* for the genus, about one-fifth the length of the entire shell; flattened or subconcave behind the hole, but not guttered. Perforation large, oblong, slightly narrower in front, and wider behind, with *a very narrow*

¹ Described by me in the Proc. U. S. National Museum, Vol. XIII, 1890.

² Mollusks of the Death Valley Expedition, U. S. Dept. Agriculture, (N. A. Fauna, No. 7), 1893.

eroded tract behind it. *Length of hole contained two and one-half, times in length of shell.* Interior bluish-white, the hole callus darker at the sides. When resting upon a plane surface, the peristome of the shell is seen to be *very much elevated behind, and but little less so in front*; the latero-basal margins strongly curved throughout.

Length $17\frac{2}{3}$, breadth 9, alt. 5 mm.

Length 16, breadth $9\frac{1}{4}$, alt. 5 mm.

Twenty-two specimens collected. This seems a very distinct species; the position and proportions of hole, the long posterior and short anterior slope, and the strongly curved basal margins being especially characteristic, and unlike other described forms.

Cyrena luchuana n. sp.

Shell large, inequilateral, oblong, the anterior end short, broadly rounded, posterior end long, produced, and squarely truncated; basal margin gently arcuate, dorsal margin narrowly rounded at the beaks, the anterior slope short and nearly straight, posterior slope long, rectilinear. Valves strong, convex, the posterior dorsal area flat or concave, bounded by a blunt angle, another obtuse angle extending from beaks to lower posterior extremity. Interior white, stained with buff-olive on the hinge. Cardinal teeth bifid; anterior lateral very short and strong; posterior lateral long, remote from cardinals. Cuticle dull brown, with a yellow under color, irregularly wrinkle-striate, lamellose behind, and less so over the whole disk. Length 94, breadth 72, diam. 47 mm.

Yaeyama Island, Loo Choo group (Fr. Stearns).

Cyrena (papua var.?) *yaeyamensis*.

Shell shorter than the preceding, being less produced posteriorly, the posterior surface not so distinctly angular, posterior truncation less marked; anterior lateral tooth not so short. Anterior dorsal slope of hinge line straight, posterior dorsal slope slightly convex. Color and sculpture as in *luchuana*, except that there is usually some oblique corrugation of the posterior slope. Length 75, breadth 63, diam. 36 mm.

Yaeyama I., Loo Choo group (Frederick Stearns).

This may prove to be a form of *Cyrena papua*, or of *C. buschii* Phil. of China, but it is more triangular, with the posterior margin more produced.

Cyrena fissidens n. sp.

Shell resembling *C. sinuosa* as figured by Clessin (Conch. Cab., pl. 45, f. 1), but the posterior lateral tooth and corresponding pit

much slenderer and somewhat longer, the posterior cardinal tooth in right valve split by a sulcus much broader than the space between the posterior and the next adjacent cardinal tooth. Valves orbicular, very convex, lightly wrinkle-striate, and covered with a black cuticle. Posterior slope depressed, with a radiating wide and shallow furrow, rendering the margin slightly emarginate. Dorsal, anterior and basal margins well rounded; posterior margin obliquely subtruncate. Length 86, breadth 77, diam. 49 mm.

Yaeyama I., Loo Choo group. A single specimen (Frederick Stearns).

Siphonalia Stearnsii n. sp.

Shell fusiform, solid, brownish; spire conical, shorter than the aperture, consisting of 8 convex whorls, which are finely spirally liriate, and *closely* and strongly plicate; plicæ becoming partly or wholly obsolete on the body-whorl, which is very indistinctly or not at all shouldered, and runs upward somewhat toward the aperture, causing a narrow, small posterior channel. Aperture shaped as in *S. fusolineata* Pse. but wider, the inner lip smooth, its edge raised and free; outer lip with a wide yellow internal border, inside of which it is thick, liriate and white. Anterior canal strongly recurved, short. Alt. 46, diam. 25 mm. Oblique alt. of aperture 29 mm.

Allied to *S. longirostris* Dkr., but less elongated, with more strongly plicate spire and different aperture. I cannot see that any of A. Adams' unfigured species agree with the specimens before me. The spire is longer and more plicated than in *S. fusoides* Reeve, and the canal more recurved.

LIST OF SHELLS COLLECTED IN JAMAICA.

BY J. B. HENDERSON, JR.

Third Paper: Operculata, Aquatic Pulmonata.

- 203. *Alcadia hollandi* C. B. A. Duncans; W. of St. Anns.
- 204. *Alcadia adamsiana* Pfr. Mandeville.
- 205. *Alcadia solitaria* C. B. A. Black River; Bluefields; Mt. Pleasant; Bog Walk.
- 206. *Alcadia depressa* Gray. Bluefields; Ora Cabessa; Bog Walk.

207. *Alcadia browni* Gray. Montego Bay ; Bog Walk.

208. *Alcadia palliata* C. B. A. Mandeville ; Bog Walk ; Sav. la Mar ; Stony Hill ; Ora Cabessa ; Mt. Pleasant ; Gallina Point.

209. *Alcadia palliata* v. *labiosa* C. B. A. Montego Bay.

210. *Alcadia maxima* C. B. A. Petersfield.

Alcadia, as typified in *Alcadia palliata* (with slit in the base of the aperture) gradually blends into *Helicina*.

211. *Eutrochatella tankervillea* Gray. Bought.

(" *Trochatella* " being preoccupied, "*Eutrochatella* " of Fischer is taken).

212. *Eutrochatella pulchella* Gray. Bog Walk ; Ora Cabessa ; Mandeville ; Gallina Point ; Stony Hill ; St. Anns ; Pt. Antonio ; Montego Bay ; Ocho Rios.

213. *Eutrochatella costata* Sby. St. Anns ; Falmouth ; Gallina Point ; Little River ; Rio Bueno.

214. *Lucidella nana* Pfr.

= *Helicina lineata* Ads. Mona House ; Mandeville ; St. Anns ; Petersfield ; Pt. Antonio ; Bog Walk.

215. *Lucidella inaequalis* Pfr. Black River ; Mt. Pleasant.

(Probably only a var. of *L. aureola*).

216. *Lucidella aureola* Fér. Everywhere.

217. *Lucidella aureola* v. *granulosa* C. B. A. Mandeville.

218. *Lucidella aureola* v. *interrupta* Simpson. St. Anns ; Duncans.

219. *Stoastoma jayanum* C. B. A. Pt. Antonio ; Petersfield ; St. Anns ; Bog Walk.

220. *Stoastoma gouldianum* C. B. A. Buff Bay.

221. *Stoastoma pisum* C. B. A. Mandeville.

222. *Stoastoma* sp. Mandeville.

223. *Stoastoma* sp. Petersfield.

224. *Proserpina bidentata* C. B. A. Mt. Pleasant.

225. *Proserpina nitida* Sby. Mandeville ; Petersfield.

226. *Proserpina discoidea* C. B. A. Bluefields ; Petersfield ; Mt. Pleasant ; Black River ; Kings.

227. *Proserpina opalina* C. B. A. Montego Bay ; Ocho Rios ; Mandeville ; Bog Walk.

228. *Proserpina pulchra* C. B. A. Mt. Pleasant ; Bluefields ; Bh. River ; Kings.

229. *Amnicola* (?) *rivularis* C. B. A. Sweet River.

230. *Amnicola jamaicensis* C. B. A. Rockfort.

231. *Potamopyrgus candeana* Orb. Sweet River.
 232. *Neritina jamaicensis* C. B. A. Great River.
 var. of *N. tristis* Orb.?
 233. *Neritina punctulata* Lam. Buff Bay.
 234. *Neritina tristis* Orb. Sweet River.
 235. *Neritina tenebricosa* C. B. A. Buff Bay; Sweet River.
 236. *Limnea umbilicata* C. B. A. Bluefields; Sweet River.
 237. *Physa jamaicensis* C. B. A. Ramble; Sweet River.
 238. *Planorbis affinis* C. B. A. Kingston.
 239. *Planorbis dentiferus* C. B. A.
 239a. *Planorbis dentiferus* var. *edentata* C. B. A. Bluefields;
 Black River; Sweet River.
 240. *Planorbis redfieldi* C. B. A. Bluefields.
 241. *Planorbis decipiens* C. B. A. Bluefields.
 242. *Planorbis pallidus* C. B. A. Rockfort.
 243. *Ampullaria fasciata* Lam. Savannah la Mar.
 244. *Hemisinus lineolatus* Wood. Sweet River; Great River;
 Rio Cobre; Mt. Pleasant; Sav. la Mar; Roaring River.
 245. *Melampus flavus* Gmel. Little River.
 246. *Melampus caffeus* L. Little River.
 247. *Melampus* (*Tralia*) *pusilla* Gmel. Little River.
 248. *Pedipes naticoides* Stearns. Little River.
 = *ovalis* C. B. A.

MY DAILY WALK.

WILLIARD M. WOOD.

What student of conchology does not take a daily walk, whether it be to one's business house, a stroll after luncheon or a walk home. And while thus taking the outdoor exercise, does one "keep an eye open" for specimens? If not, do you imagine how many specimens are passed by?

My exercise consists of a daily walk of sixty blocks; thirty of which, I walk to my office, starting at 8.30 o'clock in the morning, and the balance, coming home at 5 o'clock in the afternoon.

Every day I carry with me, a small tin box, one which I can very conveniently carry in my pocket, in which my "finds" are contained; and when a morning is very damp, the result of a rain the day before, or when a heavy fog settles over the city, then I take with me a much larger box, inasmuch as I find that I can collect two or three times the amount of specimens that I would when the ground is not very moist.

Some mornings I gather great quantities of *Zonites lucidus* Drap. (sent to Mr. Pilsbry to be identified) while other mornings, *Agriolimax agrestis* Linn. may be found very numerous. However, the following list may be called a fair sample of the specimens I collect, while on my daily walk.

<i>Specimens gathered on Nov. 11, 1893.</i>	<i>No. collected.</i>
<i>Helix (Lysinoe) nickliniana</i> Lea var. <i>reticulata</i> Pfr.	48
<i>Zonites cellarius</i> Mull.	3
<i>Zonites lucidus</i> Drap.	32
<i>Ariolimax columbianus</i> Gld.	5
<i>Amalia hewstoni</i> Cooper	13
<i>Agriolimax agrestis</i> Linn.	27
<i>Limax maximus</i> Linn.	30
<i>Prophysaon andersoni</i> Cooper	21
<hr/>	
Total	179

I may add, that of the above species, although *Limax maximus* Linn., has only been an inhabitant of this country for a period of about two years, it has multiplied so greatly, that it has become a nuisance to people who have flower gardens.

The slugs I find, generally crawl across the cement sidewalks and walls surrounding residences, while the *Zonites* apparently delight in crawling over the wooden door steps, and the *Helix reticulata* prefer secluded spots in vacant lots, among the grass or under boards. Of the last named species, I have at present, almost a thousand specimens and of the *Zonites lucidus* Drap. over three hundred specimens.

Is it not worth while then, to be "on the lookout" for specimens when out walking? One can thus see how I profit by my daily walk.

San Francisco, Cal., March 31, 1894.

NOTES AND NEWS.

REVERSAL OF CLEAVAGE IN PHYSA.—Mr. Henry E. Crampton, Jr., has recently studied the early stages of *Physa* and *Limnæa*. In the former the cleavage is according to the typically spiral type, but *totally reversed* in direction. It will be interesting to learn whether this is directly correlated with the sinistral form of the adult.

On the 28th of January last, A. TH. VON MIDDENDORFF, the celebrated traveller and zoologist died at his home near Dorpat. Middendorff is especially known to American conchologists as a writer on shells of the northwest coast.

BULIMUS OBLONGUS has recently been found by Mr. H. G. Hubbard, of the U. S. Agricultural Department, flourishing in St. Kitts, where it has been introduced from Antigua by a resident conchologist. This is perhaps, worth making a note of, since it has not been found so far north, and some one hereafter may suppose it native. Mr. Hubbard finds that a species of *Tillandsia* holds large quantities of water in the axils of the leaves; a good sized one he says will hold a barrel of water, and this water in the mountainous forests of Montserrat has a fauna of its own. He brought an *Amphibulima* (possibly *A. patula*) and *Pellicula* (? *depressa*) which he found in these moist retreats.—W. H. DALL, *in letter*.

PUPA SYNGENES Pils., has recently been received by the National Museum from Beaver Creek, Montana, (a tributary of the Little Missouri) in the river drift. This is a new locality, I believe, and interesting on account of its distance from the original place (Arizona).—W. H. DALL.

NOTE ON LIPARUS.—When studying the apices of the Australian land shells *Panda* and *Caryodes*, the writer had occasion to examine those of the Australian Bulimuli belonging to the subgenus *Liparus* of Albers. In this group the earlier whorls are very closely *pitted*, somewhat like a thimble, while in *Panda* they are decussated, and in *Caryodes* spirally lirulate. The characters of the earlier whorls seem to be of much greater importance than has generally been supposed. *Placostylus* agrees with *Liparus* in the peculiar pitting. *Bul. (Leucotænius) favannii* has a closely costulate apex, like our *B. schiedeanus*. The name *Liparus* in mollusca is preoccupied by *Liparus* Olivier, Entomologie, ou Hist. Nat. des Insectes, Vol.

V, pp. 73, 283 (1807), for a genus of Rynchophorous Coleoptera. I therefore suggest as a new name for the Australian group BOTHRIEMBRYON, the type being *Bul. melo*.—PILSBRY.

SPIRULA PERONII in Jamaica.—Mr. Edw. W. Roper reports finding a specimen of this cephalopod containing the animal, during his recent visit to Jamaica.

MR. F. C. BAKER has been appointed Curator of the zoological department of the Field Columbian Museum at Chicago.

The collection of shells of the late DR. PHILIP P. CARPENTER is offered for sale. This is an excellent opportunity to obtain a valuable and authoritatively named collection. Address Mrs. Minna M. Carpenter, 241 University St., Montreal, Canada.

SOME ARKANSAS SNAILS.—On my trip here (Fort Smith, Ark.,) I did what I did some years ago—walked from Winslow, on the top of the Boston Mountains, to Porter, six miles this side. I collected quite a number of shells, and will send you some living *Triodopsis edentata*, *Stenotrema labrosum*, *Polygra Sampsoni* and *P. Jacksoni*. I got the *edentata* from the top of the mountain to Rudy, a vertical distance of 1500 feet. At the latter place they are found with the ordinary *Triodopsis inflecta*. I hope you will have time to examine the internal parts. I find that where I got the type specimens was in Washington County, instead of Crawford; but on this trip I gathered them in both counties.—F. A. SAMPSON, *in letter*.

THE MICHIGAN FISH COMMISSION has commenced an investigation of biological conditions of the Great Lakes, with especial reference to the life history of the white fish. The work will include a determination of the fauna and flora of Lake Michigan at Ann Arbor, and of their vertical and horizontal distribution. This determination will be both qualitative and quantitative, and will be particularly directed towards a study of the life history of the white fish and lake trout. Since the life of the water constitutes first or last the food of the fish in it, this determination will afford some idea of the value of this locality as a breeding ground for fish and of its adaptability as a planting ground for the fry. The party at work in the laboratory will consist of various specialists, Mr. Bryant Walker, Detroit, Mich., taking charge of the mollusca.

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DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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AUGUST, 1894.

No. 4.

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THE NAUTILUS.

VOL. VIII.

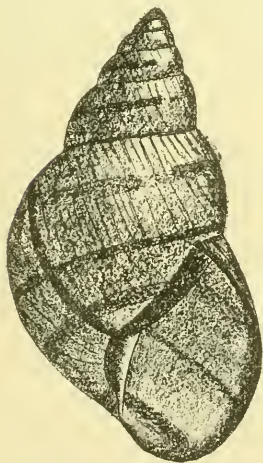
AUGUST, 1894.

No. 4

ON THE ORTHALICUS OF FLORIDA.

BY H. A. PILSBRY.

Thanks to the BINNEYS, father and son, we American malacologists rarely have anything but comparatively fair sailing when we have occasion to work with the land mollusks of our own Country. Only those who have spent days and months striving to unravel the tangled threads of synonymy, striving to see a little way into the



Orthalicus melanocheilus var.
Foridensis.

mysteries of structure, of phylogeny or origin, and of geographic distribution, can rightly appreciate the debt we owe to two men who have given the best energy and scholarship of their lives to the study of American land shells.

These reflections come to me as I think on the question of the number of species of *Orthalicus* found in Florida—a matter in which it seems to me that Mr. Binney's books have not been clear.

The species of this genus (or perhaps better, *subgenus*, for structurally it differs from *Liguus* only in trifling points) are not, for the most part, at

all well defined. The older authors mixed them sadly; and we moderns are in some danger of drawing over-fine distinctions. Still, the systematic zoologist who makes any voyages at all, must perforce sail between Scylla and Charybdis. The great art is to steer a middle course.

Returning to our *Orthalicus*, we notice that the older collectors found only the zebra-striped forms in Florida, these being identical with the species so common in Jamaica, and known for many years under the names *zebra* Müller and *undatus* Bruguière.

Some authors have attempted to establish *undatus* and *zebra* as distinct species, but the last name was proposed for a medley of *Achatinas* and *Orthalicus*, not including the form now known as *undatus*; so it will be dropped from the lists entirely. The well-known Florida and West Indian species is *O. undatus* Brug., (see W. G. Binney's works). It is not known from Mexico.

Besides this form, we find in a number of localities in Southwest Florida, an *Orthalicus* with nearly white shell, spiral brown bands and occasional oblique stripes, but none of the zig-zag flames so characteristic of *O. undatus*. This form was described by the writer in 1891, as follows:

Orthalicus melanocheilus Val. (1833).

One of the most distinct species of the genus, described originally from "New Spain" (*i. e.*, the Middle American mainland). The Florida specimens differ from the Mexican and Central American in a number of characters and seem to me perfectly distinct as a geographic variety.

O. melanocheilus var. *Floridensis* Pilsbry.

Shell white or slightly stained with brown, having no longitudinal zig-zag flames. The body whorl has three narrow brown bands, the upper one often broken into spots. There is a black varix on the penultimate whorl, and one or two on the body whorl. The varices are generally *not visible within the aperture, but the three spiral bands are conspicuous there*. Lip bordered with blackish-brown; columella white edged, but parietal callus deep brown.

The types of this variety are from near Cape Sable, Florida.

The synonymy of my variety includes:

Bulinus zebra W. G. Binney, Terr. Moll. U. S. Vol. IV, Pl. lxxviii, fig. 12.

O. zebra W. G. B. & T. Bld., Land and Fresh-water Shells of N. A., Vol. I, p. 216, figs. 370, 371.

O. undatus W. G. B., Manual of N. A. Land Shells, p. 440, fig. 483.

Von Martens has recently expressed the opinion that "Pilsbry's *O. melanocheilus* var. *floridensis* is probably a dark-mouthed variety of *O. undatus*;" but he had not seen a Florida specimen. The fact is that this is one of the most distinct forms of the typical group of *Orthalicus*, and if it be a variety of *undatus*, then *undatus* will cover all of the typical group of so-called species admitted by Crosse and Fischer, v. Martens, *et. al.*

II. SYNOPSIS OF THE MACTRIDÆ OF NORTHWEST AMERICA, SOUTH TO PANAMA.

BY WM. H. DALL.

Subfamily MACTRINÆ.

Genus **MACTRA** (Linné) Lam., 1799.

Subgenus **MACTRODERMA** Dall, 1894.

Shell as in *Maetra* but rude, inequilateral, with a coarse epidermis, pronounced pedal gape, the ligament set off from the cartilage but mostly sunken, concentrated dental armature, and the anterior arm of the right cardinal in the plane of the adjacent ventral lamina. Type:

Maetra (**Mactroderma**) **velata** Phil., 1848. Panama to the Gulf of California.

Subgenus **MACTROTOMA** Dall, 1894.

Section Mactrotoma ss.

Accessory lamellæ coalescent with laterals and cardinals.

Maetra (**Mactrotoma**) **nasuta** Gould, 1851. West Columbia to Lower California.

= *M. californica* Desh., 1854, not Conr., 1837; + *M. hiantina* Desh., 1854; + *M. ovalina* Auct. not Lam.; + *M. falcata* Weinkauff not Gould; + *M. fragilis* Cpr., 1858, not Gmel.; + *M. Deshayesii* Conr., 1868; + *Merope* sp. Weinkauff and *Spisula* sp. Conrad.

Section *Micromactra* Dall.

Hinge like the typical section, beaks sulcate, shell small.

Mactra (**Mactrotoma**) *californica* Conrad, 1837. Fuca Strait to Central America.

= *M. augusta* Desh., 1854; + *M. nasuta* Auct. not Gould; not *M. californica* Desh.

Section *Simomactra* Dall.

Accessory lamellæ free of the laterals.

Mactra (**Mactrotoma**) *dolabriformis* Conrad, 1837. San Diego, Cal., to Guaymas, Mexico.

Subgenus **MACTRELLA** Gray, 1853.Section *Mactrella* ss.

Surface of the valves smooth.

Mactra (**Mactrella**) *exoleta* Gray, 1837. Gulf of Cal. to Guayaquil.

+ *Lutraria ventricosa* Gould, 1851.

Section *Harvella* Gray, 1853.

Surface of the valves plicate.

Mactra (**Mactrella**) *elegans* Sby., 1825. Panama to Gulf of Cal.

+ *M. pacifica* Conr., 1868.

Genus **SPISULA** Gray, 1837.

Type *M. solida* L. Gray, 1847.

Subgenus **HEMIMACTRA** Swainson, 1840.Section *Mactromeris* Conrad, 1868.

Spisula (**Hemimactra**) *polymyma* Stm., 1860, var. *alaskana* Dall, 1894. Icy Cape to Necah Bay. (See eastern list for synonymy). *see p. 26*

Spisula (**Hemimactra**) *catilliformis* Conr., 1867. Neeah Bay to San Diego.

+ *Standella californica* Cpr., Auct., non Conr.

Spisula (**Hemimactra**) *Hemphillii* Dall, 1894. San Diego.

Spisula (**Hemimactra**) *planulata* Conrad, 1837. Monterey to San Diego. Not *planulata* of Cala. authors.

Subgenus *Symmorphomactra* Dall, 1894.Teeth of *Mactrotoma*, ss.; hinge of *Spisula*.**Spisula** (*Symmorphomactra*) *falcata* Gld., 1850. Comox, Br. Col. to San Pedro, Cala.Genus **MULINIA** Gray, 1837.**Mulinia pallida** Brod. & Sby., 1829. Panama to C. St. Lucas.+ *M. donaciformis* Gray, 1839, not of Reeve, 1854; + *M. angulata* (Gray) Reeve, 1854; + *M. carinulata* (Desh.) Reeve, 1854, (young shells); ? = *M. goniata* Desh., 1854, (unfigured and insufficiently described); + *M. bistrigata* Mörch, 1862.**Mulinia modesta** Dall, 1894. Guaymas, Mexico.+ *M. carinulata* Cpr. non Deshayes.**Mulinia Gabbi** Tryon, 1869. Lower California.**Mulinia coloradoensis** Dall, 1894. Gulf of California, at Guaymas and thence to the Colorado-mouth.**Mulinia coloradoensis** var. *acuta* Dall, 1894. Colorado river-mouth, Gulf of California.**Mulinia Bradleyi** Dall, 1894. Panama, Bradley.Genus **GNATHODON** Gray, 1831.Subgenus **RANGIANELLA** Conrad, 1863.**Gnathodon** (*Rangianella*) *mendicus* Gould, 1851. Estuaries, Gulf of Cal.+ *G. trigonus* Petit, 1853; + *G. truncatum* Petit, 1853.Subfamily **PTEROPSINÆ**.Genus **LABIOSA** (Schmidt) Moller, 1832.**Labiosa anatina** Spengler, 1802. West Mexico.+ *L. pellucida* Schum., 1817; + *M. cyprinus* Gray, 1828; + *L. papyracea* (Lam.) Sby., 1824.Subgenus *Raeta* Gray, 1853.**Labiosa** (*Raeta*) *undulata* Gould, 1851. San Pedro, Cala., to Panama.+ *R. californica* Melvill, as of Sowerby.

Subfamily LUTRARIINÆ.

Genus **TRESUS** Gray, 1853.

+ *Cryptodon* Conrad, 1837, not Turton; + *Schizothærus* Conrad, 1853, (about three weeks after Gray); type:

Tresus nuttallii Conrad, 1837. Sitka to San Diego, Cal.

+ *Lutraria maxima* Midd., 1849, non Jonas, 1844; + *L. capax* Gould, 1850; + *L. inflata* Dunker, 1853.

Genus **DARINA** Gray, 1853.

Darina declivis Cpr., 1865. "Vancouver;" "Forbes;" fide Cpr.

DOUBTFUL OR SPURIOUS WEST AMERICAN SPECIES OF MACTRIDÆ.

There is no typical *Mactra* or *Spisula* known from the Pacific Coast.

Mactra angusta Desh., 1854, from the Gulf of California as figured by Reeve, resembles a refined *M. californica* Conr. Wein-kauff's figure is undoubtedly *californica* Conr. not Desh. I have not seen authentic specimens.

Mulinia bistrigata Mörch, 1861, appears to be a mere color variety of *M. pallida*.

Mulinia Gabbi Tryon, is stated to have come from Lower California, but has not since been reported from there. It is very close to the South American *M. exalbida* Gray, and as *M. exalbida* is found near Panama it may reach California.

Mactrella subalata Mörch, 1861, was described from a single worn valve obtained at Realejo, Costa Rica. This was probably a ballast shell or one in some way transported from the Atlantic Coast. Caribbean shells are taken to Panama and other Pacific ports for sale to visitors, as I have personally experienced. *Mactrella alata*, of which *subalata* is a pure synonym, has not been authenticated from the Pacific where it is replaced by *M. exoleta* Gray.

M. (Mactrella) lacinata Cpr., 1856; Panama, Bridges; is probably a *Mulinia*, notwithstanding its reference to *Mactrella*. Its small size (0.7 in.) points toward immaturity. It has not been

figured or sufficiently described to enable it to be referred to its proper place in the family.

Lutraria Sieboldii Desh., 1854; "Vancouver Id., Kellett"; is a Japanese species, with which *L. lucida* Gld., 1861, (a young shell) is probably synonymous.

Darina declivis Cpr., 1865, has not been found by any collector on the N. W. coast since reported from a collection alleged to have been made by Dr. Forbes, R. N., but which had passed through the hands of a dealer. The same lot contained a shell described by Dr. Carpenter under the name of *Saxidomus brevisiphonatus*, which also has not subsequently been discovered in the region.

[Errata. July NAUTILUS at foot of p. 28, should read: *Mactra Cumingiana* "Bush," Zool. Rec., 1885, from Cape Hatteras, is a *lapsus* of the Recorder for *Macha Cumingiana*.]

April 15, 1894.

A FEW NOTES ON *HELIX TRIDENTATA*.

BY A. G. WETHERBY.

I have recently received from Mr. Pilsbry his Critical List of Mollusks collected in the Potomac Valley. Proc. Acad. Sci., Phila., 1894, pp. 11 to 31, with plate.

This is a valuable and interesting contribution from this indefatigable worker. But he has again dropped into the business of adding latin names to varieties of our common shells, so that we now have from Say's species no less than three trinominal relations, viz., *H. tridentata edentilabris*; *H. tridentata juxtidentens* and *H. tridentata fraudulenta*. I propose, in this note, to briefly review this case, as Mr. Pilsbry, having the spirit of the true naturalist, has kindly opened his pages for that purpose.

This species, though exhibiting so many variations, due to differences of station, or to inherited race proclivities, has always a general facies that marks it well. No student of our land shells *need ever* or *does ever*, mistake it for anything else. It cannot be confounded with *H. fallax* Say, though Dr. Binney believed them to be identical; nor is there any other North American species, worth anything as such, that need be taken for it. Now with this fact well

before us, I wish to use this criticism of these unnecessary names to illustrate the suggestions as to labeling such shells, made in my notes on *H. appressa* in the June NAUTILUS. The chief forms of *H. tridentata* in my collection are the following:

The type, from many localities in many States; I need not cite them here.

A variety found under the shingle and waste of the limestone cliffs about Cincinnati. This shell is characterized by its very light color, horny texture, polished appearance, comparatively few and little impressed striae, and the aperture of Pilsbry's *juxtidentis*.

A variety found on Braden Mt. in Campbell Co., Tenn., of very large size, very much depressed, deeply sculptured and with the denticles little developed and remote.

A smooth variety from Whitley Co., Ky., with polished surface, striae very little impressed, aperture nearly circular, almost without denticles.

A variety from Putnam Co., W. Va., very small, with all the mouth parts approximated, but not like Pilsbry's *fraudulenta*. This is a most interesting form, and as widely separated from the last as it well could be.

A variety from Cherokee Co., N. C., with all the characters of *juxtidentis* but with the mouth parts cupped like *H. fallax*.

Now I do not hesitate to affirm that in these lots are every gradation necessary to unite them with the type. This is a matter of the eye simply. Now what shall we do? Shall we label the first form *H. tridentata polita*, the second *H. tridentata edentilabris* or what not, and so on to the end, or shall we say for the first *H. tridentata* Say, var. Cincinnati, O., and for the second *H. tridentata* Say, var. Campbell Co., Tenn.? and so on to the end. The first method loads up our literature with trinominal designations of varieties that fix a limit just as rigid as a specific name. The second method is in accordance with nature and the facts in the case. They are varieties, uniting each other, through the gradations in each, with the type. What is a "subspecies"? I undertake to say that there is no such thing in nature whatever. We may have species; we certainly have no "subspecies." The moment the specific line is passed, if any exists, that instant we are in the realm of variations, inhabited only by varieties. To name these varieties is to make types of them as rigid as the specific type itself. If not, why name them? If so, why

call them varieties or "*subspecies*," endeavoring in this way to dodge a dangerous breaker?

As the humblest student of these beautiful and variable forms of molluscan life, I shall not cease, upon every opportunity, to enter vigorous protest against these inversions of the natural order in development.

As there are no such things in nature as subspecific or varietal barriers, so there should be none in the literature devoted to her record.

Here may the educated finer sense, the critical insight, the intense love of truth, the most unbounded capacity for labor, the acumen derived from the union and cultivation of all these, find wholesome employment and scope for all legitimate ambitions.

This is better than erecting obstructions in this highway of the omnipotent, that must crumble of their own inherent falsity.

Magnetic City, N. C.

ON CHITON HARTWEGII CPR. AND ITS ALLIES.

BY H. A. PILSBRY.

In the "Proceedings of the Zoological Society of London" for 1855, Dr. P. P. Carpenter described a number of West American Chitons, now mostly well-known to western naturalists, among them *C. Hartwegii* and *C. Nuttalli*. The descriptions though concise are excellently worded, leaving no doubt of the exact forms intended; for Carpenter was an adept in the art of writing diagnoses. In his later publications on the shells of this fauna, the systematic position of these species caused Carpenter some trouble; for he refers them to both *Trachydermon* and *Chatopleura*; and the difficulty of placing them in either of these genera caused the present writer to make a new group, CYANOPLAX (in allusion to the color of the interior), to contain them. There cannot be much doubt that *Cyanoplax* is a subgenus of the Carpenterian genus TRACHYDERMON. The species *Hartwegii* was founded upon specimens collected at Monterey by Hartweg (whom Carpenter is pleased to call "*diligentissimus*"). The type measured about 31x19 mm. (1.26x.76

inch), and agreed in its rather long and narrow form and impressed sutures with fig. 85 of plate 14 of the Manual of Conchology.

The *Nuttalli* (named in honor of the naturalist whose name is so familiar to botanist, conchologist and ornithologist alike) was collected at the same locality, and was stated to differ in being wider, depressed, the valves squared where they join the girdle, the latter not projecting between them to form deep sutures. The type measured about $26\frac{1}{2} \times 20$ mm. This is the form figured by me on pl. 14, fig. 84 of the Manual.

It is not at all difficult to pick out specimens of this short, broad form, or of the longer, narrower form, even more pronounced in character than Carpenter's types; but trouble begins when we come to the intermediate examples. In one lot of 18 specimens recently received from Miss Shepard, 6 are typical *Nuttalli*; 8 are more or less typical *Hartwegii*; but it would puzzle a Philadelphia lawyer (or conchologist either) to tell what the other specimens are. The same extremes and intermediates occur in many other trays of specimens I have seen from various localities; so that one cannot doubt that the two forms named by Carpenter are merely the variations of one species, and are not correlated with differences of station or geographic range.

All of the specimens are dull greenish, gray or even black, the lighter forms generally having a row of dark blotches on each side of the dorsal ridge; and seen under a lens, all are minutely but sharply granulated, with coarser granules scattered irregularly over and among the smaller ones, especially on the lateral areas; and they are all rather deep colored inside, varying from "Robin-egg" to "Catbird-egg" blue.

Some months ago, the writer received from Mr. W. J. Raymond, fourteen specimens of *Cyanoplax*, which differ so markedly from the species discussed above that they must form a distinct species. After reaching this conclusion the shells were put aside, for one is slow to describe new littoral shells from so well worked a locality as middle California; but renewed study of them convinces me of the necessity of the step.

Trachydermon (Cyanoplax) Raymondi n. sp.

Shell longer and narrower than *T. Hartwegii*. Back somewhat keeled, varying in elevation. Color (1) olivaceous green mottled with white, sometimes with dark lateral streaks as in *Hartwegii*,

sometimes ruddy at the ridge, or (2) uniform blackish, or (3) dark brown, uniform or with whitish flecks.

Valves rather strong, slightly beaked when unworn, the posterior (sutural) margins straight or slightly concave. Intermediate valves rather rounded where they join the girdle, scalloping the inner border of the latter; not distinctly divided into areas. Lateral areas hardly or not raised (the diagonal being indistinct) *evenly sculptured with minute, equal granules*. Central areas also evenly sculptured throughout with similar granules, slightly finer on the ridge. End valves with the same equal sculpture, the tail valve with the mucro central and a little projecting.

Interior light blue, with darker stains at bases of the sutural laminae and behind the rather strong blue white valve callus. Sinus and sutural laminae as in *Hartwegii*. Slits in valve i, 8; valves ii-vii, 1-1; valve viii, 11; teeth of end valves blunt, thick, but not distinctly bilobed. All teeth longer than the narrow, porous eaves.

Girdle narrow, black or with small whitish spots, leathery, very minutely papillose.

Length 23, breadth 11 mm. (type; San Francisco).

Length 12½, breadth 7 mm. (Bolíñas specimen).

Habitat, San Francisco, Bolíñas, Purísima, San Mateo Co., Monterey, with typical *Hartwegii*.

Specimens from the first three localities were collected by Mr. W. J. Raymond, who has seen them from Monterey also.

This is a longer species than *T. dentiens* Gld., with heavier valves, less apparent diagonal, and much longer, thicker teeth. It differs from *T. Hartwegii* (to use Mr. Raymond's words) in being (a) "narrower and smaller than southern *Hartwegii* (Monterey to San Diego) with which alone I have been able to compare them from the material at hand; (b) the color of the inside is lighter blue than in *Hartwegii*; (c) I cannot make out the warty sculpture, which you emphasize in the description of *Hartwegii*." Moreover, *the teeth are much longer than in Hartwegii*, from which the finer, *even granulation well distinguishes T. Raymondi*.

NOTICES OF NEW JAPANESE MOLLUSKS.

BY H. A. PILSBRY.

Clausilia (*Stereophædusa*) *Stearnsii* n. sp.

Shell elongated, regularly tapering, the next to the last and the

last whorl widest, the latter hardly contracted below; moderately solid, closely, lightly striated, the striae wanting on the earlier whorls, more distinct and spaced on the latter part of the last whorl. Color opaque purplish-brown. Whorls 12-13, but slightly convex, separated by a shallow, simple suture. Aperture contained $4\frac{1}{2}$ to $4\frac{5}{8}$ times in length of shell; peristome reflexed, whitish, slightly thickened, not adnate; superior lamella strong, extending to the lip-edge; inferior lamella deep-seated, parallel to the superior, invisible from the front; subcolumellar lamella extending to lip-edge, bounded by grooves; palatal plicae two, the upper one long, second rather short, with a thin white subvertical callus below it, which is strengthened below into a low bar.

Alt. 31, greatest diameter of last whorl above aperture 5 mill.

Alt. 26, greatest diameter of last whorl above aperture 5 mill.

Yaeyama (Okinawa), Loo Choo Is. (Fr. Stearns).

Believing this species to be new, I sent examples to Prof. Dr. O. Boettger, the great authority on these shells, and received the following emphatic confirmation of my opinion: "Die *Clausilia* von Okinawa ist ohne jeden Zweifel n. sp. Es ist eine *Stereophaedusa* und steht in der Mitte zwischen *japonica* Crosse und *brevior* v. Mts."

No similar form has hitherto been reported from the Liu Kiu group, the nearest allies of the species being Japanese. It is named in honor of my friend FREDERICK STEARNS of Detroit, who has contributed so largely to our knowledge of the Japanese fauna. The specimens vary considerable in length, but not in other characters.

GENERAL NOTES.

MR. WM. B. MARSHALL, who has been doing good work in the department of Zoology of the New York State Museum (Albany), has accepted the chair of Biology in Lafayette College, Easton, Penna.

The peculiar shell described in the June NAUTILUS as *Perostylus*, proves to be the larval form of *Fusus probosciferus*. A paper on the subject will appear in the September number.

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DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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SEPTEMBER 1894.

No. 5.

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SEP 10 1894

THE NAUTILUS.

VOL. VIII.

SEPTEMBER, 1894.

No. 5

REMARKS ON THE STATUS OF SPECIES AND SUBSPECIES.

BY H. A. PILSBRY.

In several articles published in recent issues of this journal, a conchologist as well known for his wide experience in the field as for the vigor and point of his fluent pen, has been at some pains to criticise certain work by the writer, on American land shells. Several newly named varieties of well known shells are particularly obnoxious to my good friend; and in another place¹ he attacks the recent systems of classification of land shells, darkly hinting at certain tabulated results which he fancies would astonish systematists. Now in view of the amount of ink wasted over the questions of SPECIES, VARIETIES and CLASSIFICATION, it may be worth while to point out a few of the facts in the case; to show the futility of arguing on the abstract question of species, and incidentally to call attention to some of Mr. Wetherby's mistakes in dealing with certain varieties described by myself.

Mr. Wetherby says: "we may have species; we certainly have no subspecies." Now the truth is that *Nature* knows nothing of "species" or "subspecies," but only *individuals*. All *groups* of individuals are conventional and artificial. Were the record of palaeontology complete, almost the entire mass of living individuals would be found to be connected throughout by intermediate forms. Not only would most of the *species* intergrade, but the genera, families

¹Land Shells of Roan Mt. and Vicinity, Journal Cin. Soc. N. H.

and orders likewise. I say "most" because some would not intergrade; for contrary to the old adage, nature *does* sometimes jump. The theory of descent, and the connection of distinct, recent species by their extinct ancestors being admitted, we may next inquire what convenient artificial limits may be erected to defined the "species;" for all scientific investigation would be at a stand still if we have no names whereby to designate the various organisms about us. Probably the only definition of any use is that a species is any assemblage of similar individuals of presumably common ancestry, which cannot be connected by living intermediate specimens with other groups of individuals. It is the break in the chain which allows us to constitute the species; and whether this break be wide or narrow is of little importance so long as no recent organisms intermediate in characters are known.² However this idea may be worded, there is no possible foundation for species on any other basis. Now, many species, especially those having a wide range of distribution, show in some parts of their range considerable modifications usually correlated with peculiarities of climate, soil, or other factors known or unknown of their environment. These modifications are often sufficient for specific separation were it not for the fact that in some localities the links connecting the extreme forms occur. We have here species in process of making, waiting only for the extinction of the intermediate individuals or for the further intensification of the differential characters, to become full-fledged specific types. It is obvious that science must take cognizance of these incipient species, if it is to be a true record of nature; and for this reason "subspecies" or "varieties" are recognized. Of course they "run into" each other in some part of their range, otherwise they would be *species*. To ignore these varietal forms would be not removing obstructions from "the high-way of the Omnipotent" as Mr. Wetherby says, but a piece of the most pedantic falsity. The far-reaching importance of these local or geographic "subspecies" will be recognized when we understand that in them we have the material of future species in the making. We have moved away from the Darwinian conception that species have arisen from favorable variations of occasional individuals, preserved by the action of natural selection or "survival of the fittest"; and now we see much reason to believe that the whole mass of individuals over a given area of changed or changing conditions, is simultaneously remoulded, not

²The question of hybrids need not be considered here for obvious reasons.

by *individual variations* (which must usually be quickly effaced by interbreeding with normal or differently modified individuals), but by the steady action on the entire mass of the factors of climate, elevation, food-plants, currents and other quantities of the complex equation unknown to us.³

Mr. Wetherby proposes to avoid the use of subspecific or varietal names by the circuitous method of writing the *locality* after the specific name. He would say "*H. tridentata* Say, var. Campbell Co., Tenn." "*H. tridentata* var. Cincinnati, O." "*H. cereolus* var. Sanford, Fla." etc. Now the disadvantage of this system is that it tells absolutely nothing to the man who has no specimens from those exact localities, without a detailed description of the shells in each case. Moreover, Mr. Wetherby would write "*H. appressa* var. Woodville, Ala." for both *H. appressa perigrapta* and *H. sargentiana*, two very dissimilar forms. Who would know which one he meant to indicate? The trinomial system on the other hand offers a convenient, concise, readily understood index to geographic and local races. When one says "*P. cereolus septemvolva*" the idea is conveyed as exactly and much more concisely than by saying "*P. cereolus* large var. St. Augustine," for unless one has specimens from this locality he would not then know just what was meant. Again, were one to say "*P. cereolus* small var. Sanford, Fla." nobody could tell whether the variety found there was that with an internal lamina (*P. cereolus carpenteriana*) or without a lamina (*P. cereolus volvox*). Now what is the use in all this circumlocution when we have so convenient a system of nomenclature as the trinomial system, already in practical use in other departments of zoology.

Having discussed the abstract questions at issue at such length, we can devote but little space to the particular cases cited by Mr. Wetherby; but this is the less needful because what we wish to establish is the great importance of subspecies in general, not of any particular one of our own naming. We may, however, re-affirm the

³ One of the most potent causes of specific or varietal differentiation has been the glacial epoch, which undoubtedly caused a southward movement of the entire northern fauna. Upon the recession of the ice sheet the species thus driven south found themselves exposed to changing climate and food-plants in their new home. Those following the retreat of the ice found the topography, soil and drainage systems of their former area in the north vastly changed. What wonder that we find many geographic subspecies! And shall we shut our eyes to the results upon our snails of the action of these cosmic forces, these manifestations of the Omnipotent?

reality of the distinction between the mass of southern, and the northern specimens of *P. appressa*. The northern shells described by Say have no incised spirals whatever, and the upper lip-tooth is frequently developed. The southern specimens (which we have called *P. appressa perigrapta*), have spiral incised lines more or less developed, and the upper tooth is wanting in the vast majority of cases. When it is present, as in the Cherokee Co., N. C. examples mentioned by Mr. Wetherby, I would regard it as an interesting case of reversion.

As to *Polygyra tridentata*, Mr. Wetherby has not read my paper with sufficient care to see my meaning. He attacks my *P. fraudulentata*, but says in the next sentence that *P. fallax* is perfectly distinct from *tridentata*. The truth is that *Helix fallax* of Wetherby and other modern authors and collectors is identical with my *fraudulenta*! The true *H. fallax* of Say is identical with *H. introferens* Bland, as I have already stated in this journal and elsewhere. So my critic discredits and affirms the validity of this form in one article! As to *P. tridentata edentilabris*, Mr. Wetherby has evidently never seen it. The var. *juxtidentens* is a well-known form. I believe it to be a distinct line of differentiation, well worth attention and recognition by name.

I have not referred in this article to the large class of individual variations such as is shown in the banding of many *Helices*. This mode of variation is often repeated, different species having parallel modifications. The mutations are frequently not inherited, any of the forms giving birth to numerous others, as is the case with the band-varieties of *Helix nemoralis*. This tendency to "sport" in all directions is a totally different thing from the moulding of an entire race explained above; and its products cannot usefully be given varietal names. They are best expressed by formulæ devised to cover entire classes of such variations.

TYPES OF ANODONTA DEJECTA REDISCOVERED.

BY CHAS. T. SIMPSON.

In making a final arrangement of the general collection of *Unionidae* of the National Museum I found the other day among some

Unios, Lewis' types of *Anodonta dejecta*. The species was furnished by Dr. H. C. Yarrow, Surgeon and Naturalist of the Wheeler Expedition, and was said to have come from the Arkansas or its tributaries, west of the 100th meridian. The lot consists of three broken valves, two of them forming a normal pair but very much distorted.

I saw in a moment that the shell I named *Anodonta mearnsiana* in the NAUTILUS, Vol. VI, no. 12, p. 134 was the same, and my name will therefore have to be relegated to the synonymy.

Lewis described his species in Field and Forest, Vol. 1, nos. 3 and 4, page 26, and in Wheeler's Report upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian, vol. V, Zoology, p. 952, 1875, but did not figure it.

I am almost certain that the locality given by Dr. Yarrow is wrong, as the specimens collected by Dr. Mearns were from San Bernardino Ranch, Arizona, out of waters that drain into the Colorado River of the West. A very large number of specimens were sent, and there can be no doubt as to where they were found.

It would indeed be a strange thing if this species was obtained from two places seven or eight hundred miles apart, in two distinct drainage areas. As the locality given for Lewis' species is rather vague, and a large amount of the collections of the Wheeler Expedition were made on the Pacific slope it is quite probable that the types of *A. dejecta* came from the Colorado drainage basin.

Washington, D. C., Aug. 1st, 1894.

DESCRIPTIVE NOTICES OF NEW CHITONS, V.

BY H. A. PILSBRY.

Ischnochiton ptychius n. sp.

Shell small, oval, moderately elevated, with fine and distinct though rather obtuse dorsal keel and slightly convex side-slopes; bright *flesh-pink*, with a few white dots along the sutures, and creamy angular patches on the outer portions of the pleura of some valves, the girdle dull flesh-colored with indistinct whitish mottling in some places.

Median valves short, the posterior outlines slightly concave, with the beaks but slightly indicated. Lateral areas slightly raised, each

divided by one curved radial groove in front of the middle of the area, with one or several shorter, less distinct grooves in front of it; *concentrically sculptured with coarse, low, irregular wrinkles*, which make the sutural margin feebly dentate. Central areas finely and minutely sculptured with *irregularly zigzag transverse, vermiculate subgranose wrinkles*, which are broken into granules on the ridge, and are punctulate, the outer portions of the pleura more coarsely wrinkled. Valve i having weak radial grooves and concentric wrinkles. Valve viii with central, low, mucro, the posterior slope somewhat concave; sculptured like the head-valve but more obsoletely.

Interior rose-pink, fading to white on the sutural laminae. Sinus wide, notched at the bases of the sutural laminae; eaves narrow and *distinctly porous*. Median valves with 1-1, tail valve 16 slits; teeth sharp, very *distinctly crenulated at the inner edge*.

Girdle wide, densely clothed with scales which are weakly striated, and measure about one-seventh of a millim. in width, and *imbricate inward and backward*.

Length 11, breadth 8 mm.

Hab. St. Vincent Gulf (Bednall).

A peculiar little species, shorter than most Australian *Ischnochitons*, and wrinkled much as in *I. striolatus* Gray. In the individual before me there are creamy patches at the outer ends of valves iv, v, vii and viii; on the last valve there is some olive-green variegation of the cream color.

Chiton (*canaliculatus* var. ?) *tricostalis*, n.

Allied to *C. canaliculatus* Q. & G. (+*insculptus* Ad. and *stangeri* Rv.) and *C. discolor* Souv. (+*miniaceus* Cpr.), but having fewer radial riblets on end valves and lateral areas than the first, and more elevated than *discolor*, with projecting, more backward-hooked mucro on the tail valve.

Shell oblong, elevated, acutely keeled with nearly straight side slopes. Color variable, either (1) uniform chrome yellow, or (2) olivaceous mottled finely with white, with some white patches on the lateral areas, the outer halves of the pleura blackish, girdle olivaceous with cream-white bars opposite the sutures.

Median valves a trifle beaked, the posterior (sutural) margins nearly straight. Lateral areas well raised, having three radial tuberculate riblets, the middle one shortest; tubercles rounded and spaced on front two ribs, closer and compressed on the posterior rib,

where they denticulate the sutures. Rarely a fourth very short rib is indicated on some valves. Central areas having a smooth dorsal band of about the same width in front and behind, or somewhat wider in front. Pleura having 14–15 longitudinal riblets, narrower than their intervals, the inner 1 to 3 on each side not reaching to the anterior margin of the valve. Head valve with 17–19 radiating tuberculate ribs. Posterior valve elevated, the mucro projecting, posterior slope concave. Interior milky bluish, the sutural laminae white.

Girdle densely clothed with imbricating finely striated scales, shaped like those of *Chiton sinclairi* and measuring about one-third of a millim. in width.

Length 17, breadth 9 mill.; an olivaceous, variegated specimen is somewhat larger.

Hab. St. Vincent Gulf, S. Australia (W. T. Bednall).

This form differs from *C. muricatus* in the shape of the girdle scales. It is more roughly sculptured than *C. canaliculatus*, with the girdle-scales different in form, although they are about the same width; and with a different pattern of coloring, although in this respect all the allied forms of the *canaliculatus* group vary a good deal. The smooth dorsal band is wider than in *canaliculatus*.

It is somewhat doubtful whether this should be considered a geographic variety of the New Zealand species or an independent species. It is at all events closely allied to the *C. canaliculatus*, although actual connecting links between the two are unknown to me. The detail figures given in volume xiv of the Manual of Conchology (pl. 36, f. 4, 6) excellently represent the sculpture of *C. canaliculatus*, being drawn from a specimen furnished by Professor Hutton.

Chiton æreus var. *calliozona* n. var.

Shell oblong, elevated, the dorsal ridge acutely keeled, side-slopes straight; light olive-green, with a few concentric lighter streaks upon each valve, and obscure dusky-green longitudinal streaks on each side of valves ii and vi, less conspicuous on iii and v. Posterior (sutural) margin of valves i to vii articulated or tessellated, being painted with alternate white and brown oblique spots. Girdle buff, paler on the outer half of its width, variegated with *transverse bars of crimson and black scales* mingled with the buff ones; about 10 bars on each side.

Median valves scarcely beaked, the posterior outline of each concave. Lateral areas raised, sculptured with two or three radial grooves, becoming more numerous toward the bases, and inconspicuous growth-striae. Central areas having a wide smooth triangle in the middle; *sculptured in front of each diagonal slope with narrow, spaced impressed longitudinal grooves*, not half as wide as the intervals, and which form a sculptured band, increasing but little in width outwards. *Toward the beaks of each valve these grooves disappear entirely, but are replaced by distinctly painted green lines*, very curiously simulating the grooves. Anterior valve with about 28 convex radial riblets, some split at base. Posterior valve with subcentral subprominent mucro, and slightly concave posterior slope, weakly radiated. Interior pale blue, the sutural laminae white. Sinus very narrow.

Girdle densely clothed with very convex, shining, polished solid scales, those in the middle of its breadth largest, measuring, six-tenths mill. in width.

Length 38, breadth 18 mill. (exclusive of girdle).

Hub. St. Vincent Gulf (W. T. Bednall).

I have not much doubt that this shell is a form of Reeve's *areus*, but the coloration is different, the number of riblets on the pleura is not nearly so great. Mr. E. A. Smith has united *areus* to the Mediterranean *C. siculus* (= *olivaceus*), but I can hardly endorse such a lumping of forms from totally different areas.

ISAIAH GREGOR.

We have heard with deep regret of the death of Mr. Isaiah Gregor, which occurred on the 26th of July at his home, Cuyahoga Falls, Ohio.

Mr. Gregor was not only an extensive dealer in shells, but also an ardent and earnest Conchological student. Though for many years engaged in a business requiring strict attention and skilful management, he never allowed this to interfere with the promptings of his generous heart; a fact which was constantly exemplified by his timely suggestions and gifts of specimens to friends and others engaged in Conchological pursuits. He also took much interest in the completion of the American Association's collection. His last

gift to this,—some two months ago, was a number of Florida species; among them a suite of *Strombus alatus* Gmel., remarkable for their very large size and brilliant coloring; the latter ranging from the brightest crimson to the deepest purple. The presentation of this suite gave him a great deal of pleasure, and we shall never forget his gratified expression when he saw them safely placed.

How little did he then think that his eyes rested upon them for the last time!

“We mourn him dead, yet is he living.”

[COMMUNICATED.]

NOTES AND NEWS.

TRACHYDERMON RAYMONDI IN BRITISH COLUMBIA.—Mr. C. F. Newcombe has found this species abundant at Victoria, on exposed headlands, its stations being similar to those of the *Nuttallinas*. It was formerly confused by collectors of that district with *Tr. dentiens*, young *Mopalia lignosa*, and young *Nuttallina scabra*. The occurrence of the latter species in British Columbia is extremely doubtful. *Trachydermon raymondi* will probably prove to have the distribution of *Nuttallina californica*, *Ischnochiton mertensii* and *Tonnicella lineata*.

NOTE ON ORTHIALICUS MELANOCEILUS FLORIDENSIS.—In the reference to Land and F. W. Shells, N. A. (foot of p. 38) “fig. 371” should be omitted. That figure represents a shell from the Sierra Madra, and shows the conspicuous dark oblique stripe in the aperture characteristic of typical *melanocheilus*, and the spirals are very faint there. A good figure of the Florida shell has been given by Mr. Binney in “Fourth Supplement T. M. V,” pl. 2, f. 4.

AGRIOLIMAX CAMPESTRIS IN NEW MEXICO.—Mr. A. Boyle has given me a specimen of *Agriolimax campestris* which he found in his garden at Santa Fé, about 7100 ft. above sea level. The specimen is pale brown, with a pale grey unicolorous sole. So far as I know, this is the first slug recorded from New Mexico.—T. D. A. Cockerell. July, 1894.

NEW METHOD OF PREVENTING CRACKING OF ANODONS.—EDS. NAUTILUS: All collectors are aware of the trouble we have

in preserving Anodons. No matter how good they may be, they won't stay so if they can only get to split up in pieces. Last spring a fish pond here was drained and I obtained a good lot of very fine large *Anodonta fluvialilis*. I washed them clean on Saturday and put them aside to dry, and when I came back Monday morning they were having a regular "pic-nic" splitting and popping. So I just gave them a bath of thin white shellac and alcohol and they have been behaving well ever since. I send you some specimens that you may see the effect it has on them.

Frank Burns, Washington, D. C.

[The specimens are still in good condition, and the plan is worth a further trial. The principle is that the shellac forms an impervious layer over the epidermis, preventing that evaporation of water from the latter which causes it to contract and break the thin calcareous layer. The shellac should therefore be applied as soon as the surface of the mussel is dry. Its main disadvantage is in the artificial gloss which it gives the shell, which would prevent its use on lusterless specimens. If the shellac is very thin it does not effect the appearance of glossy shells like *A. fluvialilis*.—ED.]

ERRATA.—A typographical error occurred in the July number of the NAUTILUS and I desire to correct same. In the article "My Daily Walk" on page 34, the *second line under the list of species collected*, I notice the *ninth word* should have read as "county" and not "country."—Williard M. Wood.

NOTICES OF PUBLICATIONS RECEIVED.

NATURAL HISTORY NOTES FROM NORTH CAROLINA (Papers nos. 2 and 3) by A. G. Wetherby (from the Jour. Cincinnati Soc. Nat. Hist.). In these papers on "The Land Shells of Roan Mountain and Vicinity" the author enumerates fifty-four species with interesting notes on each. A parasitic species of Diptera is here recorded infesting *Zonites elliotti* and *Polygyra fustigans*.—C. W. J.

GEOGRAPHIC AND HYPOMETRIC DISTRIBUTION OF NORTH AMERICAN VIVIPARIDÆ by Prof. R. Ellsworth Call (from the American Jour. of Science for August). This interesting article is accompanied by a map showing the distribution of each species. The

author recognizes two species of *Tulotoma* (*magnifica* and *coosaensis*), four of *Vivipara* (*contectoides*, *intertexta*, *subpurpurea*, *troostiana*), two *Lioplaces*, and nine species of *Campeloma*. The main facts of the distribution and station of each species are stated, largely from the authors own wide experience in the field. It would be unreasonable to expect any discussion of synonymy in a paper of the scope of this one, but even if Prof. Call could prove the specific identity of *Vivipara contectoides* with *georgiana*, *wareana*, etc., why should he use the *latest* instead of the *earliest* name for the species? —J. & P.

DR. WM. H. DALL has recently issued a "MONOGRAPH OF THE GENUS GNATHODON, GRAY (RANGIA DESM.)." In this essay the priority of the name *Gnathodon* for the group is demonstrated; the anatomy of both soft and hard parts is described, and the species are discussed and figured. Dall concludes that *Gnathodon* does not constitute a distinct family near *Cyrenidae*, as Fischer has it, but that it belongs without doubt to *Maetridae* and is probably an off-shoot from the *Mulinia* stock. The range of the genus is "Subtropical America, the Gulfs of California and Mexico, in shoal quiet water, varying from salt to fresh, but preferably somewhat brackish; range in time from the newer Miocene to recent seas." Three sections are adopted, *Gnathodon* typical, *Miorangia* Dall and *Rangianella* Conr. *G. cuneatus* Gray is the commonest species in collections (often under the name *Rangia cyrenoides*).

THE MOLLUSCA OF THE PARIS MAINS.—M. Locard has been making some very interesting studies of the mollusks of the water-mains of Paris, from which he has collected forty-four species belonging to thirteen genera, among which several species are described as new to science. These are, however, only slight varieties of well known species. Among other peculiarities of this strange fauna he notes four marked modifications, due to their environment, in which they differ from the types in the waters from which these mains are supplied. These are: [1] A diminution of size, due to the absence of light; [2] a decrease of marked coloration, due to the same cause; [3] decided modifications of form, generally producing a lengthened shell, due to the mechanical action of a steady and rapid current; [4] difference of general appearance, the polished, brilliant shell being developed with regularity in a constant medium. The last two peculiarities may be noticed in the shell life of those streams in tropical countries which in the shaded mountains are constant; as

differentiated from the formation and appearance of members of the same species found in the periodic streams of the open plains, which disappear with each recurrence of the dry season.

ON THE JAMAICAN SPECIES OF VERONICELLA, by Prof. T. D. A. Cockerell and R. R. Larkin. (Journ. of Malac. III, pt. 2, 1894). The material discussed in this paper consists of 18 specimens, all referred to *V. sloanii*, from Jamaica. These were dissected and their characters carefully noted. The conclusions reached are of much value to investigators of this difficult genus. "The results obtained are quite remarkable and tend to throw doubt on the validity of several characters hitherto used for the separation of species in the genus * * * The specimens show great differences from one another, so that by selecting a few of the most distinct forms, several apparently good species might be described. Yet we believe that the whole series represents the variations of but one species, *V. sloanii*, and that *V. virgata* Ckll. must be reduced to *V. sloanii* var. *virgata*. * * notwithstanding so much variability, the species as now defined should be easy of recognition. The following characters appear to be quite constant and of specific value in *V. sloanii*. (1) The under-side is always free from spots or markings of any kind, whereas *occidentalis* Gldg. from the Lesser Antilles, has some spots below. (2) The sole never projects from behind the body, as it does in one or two of the continental species. (3) The filiform glands are less than 10 mill. long, whereas in *dissimilis* and *floridanus* they are considerable longer. (4) The penis is always long, cylindrical, with the end slightly bulbous and the orifice terminal. It thus entirely differs from that of such species as *V. portoricensis*. (5) The filiform glands are always more than 10 in number thus differing from *V. morchii* and *V. dubia*. (6) The female orifice is always post median, thus differing from the continental *V. nigra*, etc."

The characters of size and shape, distance of female orifice from head and sole, size of penis and splitting of its retractor, number and length of filiform glands etc., were found to vary within wide limits, and their several variations were not correlated in the different organs, so that no dependence could be placed upon the various combinations presented for specific distinctions. Color, contrary to the opinion of some authors, seems useful in some cases. The whole series examined is systematically tabulated; and the only thing lacking in this admirable paper is *illustration*. Still, this is a lazy complaint when all is so clearly described.

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DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

12, 214.

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Vol. VIII.

OCTOBER, 1894.

No. 6.

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REV. HENRY W. WINKLEY, Saco, Maine.

THE NAUTILUS.

VOL. VIII.

OCTOBER, 1894.

No. 6

THE AMERICAN SPECIES OF CARYCHIUM.

BY HENRY A. PILSBRY.

The genus *Carychium* contains some of the smallest land mollusks known. The shell is cylindrical or high conical like that of *Pupa*, but the lack of eye-stalks and the form of the lingual teeth show the genus to belong to the family *Auriculidae*, a group best known in America by the salt-marsh inhabiting *Melampus*. The species of *Carychium*, like other *Auriculidae*, are terrestrial in habit, living among damp leaves or wood. The genus contains about 15 recent species, distributed over nearly the whole northern hemisphere.

In THE NAUTILUS for 1891, vol. iv, p. 109, the writer gave a brief notice of the United States forms of the genus. Subsequent study resulted in a synopsis of the group, which was published in Proc. Acad. Nat. Sci., Phila., 1891, p. 318, with plate xiv. With a view of enlisting the services of conchologists in the needed examination of more material from various parts of the country, this synopsis is here reprinted. Information is needed to establish the range of the various forms, particularly in the West and South, and also the variations of the several forms. Only the collection of specimens from points geographically intermediate between the extremes of the range of this genus, and the examination of such material by a competent person, can finally decide the question of the number of naturally defined species, and which, if any of them, must be considered geographic races or sub-species.



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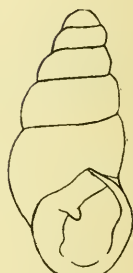
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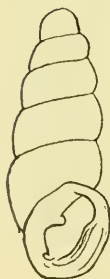
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13



14

Carychium exiguum Say. Figs. 1, 2, 3.

Shell *cylindrical*, the last two whorls of about equal diameter. Whorls $4\frac{1}{2}$. Aperture decidedly over one-third the total altitude. Outer lip sinuous, moderately thickened, very strongly arcuate at its upper outer portion.

This is the common East American form, ranging from Maine southward and westward, the limits of its range not exactly determined as yet.

Carychium exiguum var. *Mexicanum* Pilsbry. Figs. 7, 8, 9.

Shell cylindrical. Whorls $4\frac{1}{2}$. Aperture equal to, or a trifle exceeding one-third the total altitude of shell. *Outer lip thickened at and below the middle by a very heavy deposit of callus upon its face.* Lower fold of the columella sub-obsolete. Surface delicately striated.

Orizaba, Mexico.

Carychium occidentale Pilsbry. Figs. 4, 5, 6.

Shell *distinctly conical*, tapering. Whorls 5. Aperture very oblique, larger than in *C. exiguum*, the outer lip flatly expanded, thin, *not at all thickened on its face.*

Portland, Oregon, is the only locality from which I have seen this species.

Carychium exile H. C. Lea. Figs. 10, 11, 12, 13, 14.

Shell *elongated*. Whorls $5-5\frac{1}{2}$. Aperture small, very oblique, about *one-third the length of the shell*. Outer lip more or less thickened. *Surface closely, regularly and very distinctly striated.*

Eastern Pennsylvania (H. C. Lea); Kent, Ohio (Geo. W. Dean).

Lea found this form on the Wissahickon Creek, near Philadelphia, but I have not been able to rediscover it there.

Carychium exile var. *Jamaicensis* Pilsbry. Figs. 15, 16.

Much elongated, similar to *C. exile*, but the surface smooth, not perceptibly striated.

Jamaica.

LIST OF SHELLS FROM THE VICINITY OF MINGUSVILLE, MONTANA.

BY HOMER SQUYER.

Many of the smaller forms were picked out of fine river drift found along the banks of Beaver Creek, a tributary of the Little Missouri, after the subsidence of the freshets.

The occurrence of *Pupa syngenes* Pils., previously known only from Arizona, and of *Planorbis umbilicatellus* Ckll., described and reported only from Manitoba, are especially interesting. Many of the forms were identified at the National Museum by Messrs. Dall and Simpson, while Dr. Sterki has kindly named the *Pupidæ* and *Vallonias*. Mingusville is two thousand six hundred and forty-five feet above sea level.

HELICACEA.

Family ZONITIDÆ.

Vitrea arborea Say; worn var., approaching *V. breweri* Newc.

Vitrea radiatula Alder, rare.

Conulus fulvus Drap., one specimen.

Pseudohyalina minuscula Binn.

Pseudohyalina leviuscula? Sterki. Close to vars. of *minuscula*.

Pseudohyalina conspecta Bland.

Family ENDODONTIDÆ.

Pyramidula striatella Anth.

Family HELICIDÆ.

Vallonia gracilicosta Reinh.

V. gracilicosta var. close to *costata* Say.

Vallonia perspectiva Sterki.

Vallonia pulchella Mull.

Family PUPIDÆ.

Pupa muscorum L.

Pupa blandi Morse.

Pupa blandi var. *edentata*; one specimen.

Pupa syngenes Pilsbry. Eight more or less perfect specimens.

Pupa holzingeri Sterki.

Pupa armifera Say.

Pupa pentodon Say.

Pupa decora Gould.

Vertigo ovata Say.

Vertigo binneyana Sterki.

SUCCINEACEA,

Family SUCCINEIDÆ.

Succinea avara Say.

Succinea obliqua Say.

Succinea grosvenori Lea.

Succinea lineata Binn.

LIMNÆACEA.

Family LIMNÆIDÆ.

Limnæa palustris Mull.

Limnæa bulimoides Lea.

Limnæa humilis Say.

Limnæa caperata Say.

Planorbis bicarinatus Say.

Planorbis lentus? Say; young shells only.

Planorbis parvus Say.

Planorbis umbilicatellus Cockerell; (*P. umbilicatus* Taylor, Leeds Journ. Conch. IV, p. 351, 1885, not of Müller, 1774). Described from Manitoba.

Family ANCYLIDÆ.

Ancylus rivularis Say, one specimen.

Family PHYSIDÆ.

Physa gyrina Say, young only.

Physa ancillaria Say.

Physa heterostrophu Say.

Physa lordi Baird.

PELECYPODA.

Family CORBICULIDÆ.

Sphaerium sulcatum Lam.

Pisidium compressum Prime.

Family UNIONIDÆ.

Anodonta plana Lea, young.

Anodonta ovata Lea, young.

Only one perfect and adult specimen of *Planorbis umbilicatellus* was obtained in the river drift. It is readily distinguished from *P. parvus* Say by its narrow funnel-shaped umbilicus and higher, somewhat beveled whorls. It was first collected in Manitoba by R. M. Christy, Esq., and described by Taylor under a name already widely known in the literature though generally regarded as a synonym of one or another Linnean species. It was re-named by Cockerell, in the Conchologist's Exchange, November, 1887, p. 68. (W. H. D.).

NOTE ON *HELCIONISCUS NIGRISQUAMATUS* REEVE, SP.

BY GEO. W. TAYLOR.

I have recently received from Mr. Frederick Stearns of Detroit a number of shells collected by himself and labelled as follows :

"*Patella boninensis*, Bonin Is."

"*Patella stearnsii*."

"*Patella* near *stearnsii*, Japan, 1892, only 8 found."

"*Patella nigrisquamata* (?), Loo Choo Is., Yacyama Is."

"*Patella nigrisquamata* (?), a var., Japan, 1892."

All the specimens sent are, in my opinion, referable to a single species which has long had a place in my cabinet as *H. nigrisquamatus* Reeve.

Reeve's locality for this species was "Australia," but this has never been confirmed and is doubtless an error. The same I think must be said of the additional locality, "Concepcion Chili," given by Mr. Pilsbry (in the Manual, XIII, 126), on the authority of Dr. W. S. W. Ruschenberger, for we cannot concede to any limpet a range so extensive as from Japan to Chili, and Japanese shells of which I am now writing are certainly true *nigrisquamatus* if figures and descriptions count for anything. I may add as negative evidence of a certain value that of several thousands of limpets from Chilian and Australian localities that have passed through my hands, I have never seen a specimen, young or old, approaching this species.

With regard to *P. boninensis*, the differences on which Mr. Pilsbry relies are 3 in number (see Man. Conch. XIII, 132). The first *geographical*; but as *nigrisquamatus* has not been found in the same habitat as the original specimens of *boninensis* this distinction no longer holds. Secondly, the *size of the central callus*; but such a difference would hardly be specific, taken by itself, I should think, and moreover, it is not apparent in the series before me. Lastly, Mr. Pilsbry notes the *brown streaks* diverging from the head segment of the central callus. These marks, however, are present in some of the specimens sent as *nigrisquamata* and absent in others sent as *boninensis*, showing either that the original collector was unable to separate his shells accurately or else that the distinction is not a constant one.

As to *P. stearnsii*, if the shells sent to me by Mr. Stearns are conspecific with the type specimens named and figured (from his collection) by Mr. Pilsbry, then in my opinion *stearnsii* is only a young form of *nigrisquamata* and I suspect (from the description) that *Patella grata* of Gould is the same shell. I am, therefore, inclined to write:

Helcioniscus nigrisquamatus Reeve (*Patella*), 1854.

= ? *P. mazatlandica* Sowb., 1831.

= *P. grata* Gould, 1859.

= *P. boninensis* + *P. Stearnsii* Pilsbry, 1891.

Habitat: Japanese Seas, Stearns; "Australia," Reeve, error; "Chili," Ruschenberger, ? error.¹

PEROSTYLUS, THE EMBRYO OF MEGALATRACTUS.

BY H. A. PILSBRY.

In a former number of this journal (June, 1894) the writer proposed a new genus, *Perostylus*, for the *Cerithium* (*Colina*) *brazieri* Tryon and another supposed new species. Upon the appearance of the paper describing these forms, I was informed by my encyclopedic friend, Professor Theodore Gill that the type of the new group had been shown by Professor R. Tate to be the embryonic portion of "*Fusus*" *probosciferus*. Some time after, the article by Tate, published in the Proc. Linnean Society of New South Wales (Australia), Second Series, Vol. VIII, pt. 2,² p. 244, came to hand.

In reference to *Cerithium* (*Colina*) *Brazieri*, Professor Tate writes: "The above named gastropodous shell is described in Tryon's Manual of Conchology, Vol. IX, p. 142, and illustrated t. 26, fig. 16. The occurrence of *Colina* in the Eocene beds of Victoria has led me to a study of the recent species, and in doing so I was arrested by the unlike-

¹ Mr. Taylor is unquestionably right in considering *Helcioniscus boninensis* a synonym of *nigrisquamatus* Rv. I had satisfied myself of this by the examination of the National Museum collection some years ago. He errs, however, in placing *H. stearnsii* in the same category as it is a totally distinct thing. Mr. Taylor probably had the young *H. nigrisquamata* before him, as so acute an observer could hardly confuse *stearnsii* with the other species.—ED.

² Issued March 12, 1894.

ness of Tryon's figure, as above quoted, to other members of the genus; moreover, the shell seemed familiar to me, and if I am right in my identification it is nothing more than the embryo of *Fusus proboscidiferus*, of which I have examples from Port Essington. The apical whorls of that shell are often decollated, but in some specimens there remains sufficient of the apex to permit one to arrive at the opinion just stated."

If any further evidence is needed to demonstrate the true nature of *Perostylus*, it is supplied by Mr. Edgar A. Smith of the British Museum (Natural History), who writes to me as follows:

"The presence of a fine series of *Fusus proboscidiferus* Lamarck in the British Museum Collection, ranging from the very young state up to the adult form, enables me to show that *Perostylus* is merely the apical portion of the spire of that immense West and North Australian shell.

"The late Capt. Beckett brought from the Dampier Archipelago a number of specimens of this species besides a fine mass of the egg-capsules containing the young shells in large numbers. These agree exactly with the description and figure of *P. brazieri* (Tryon) and *P. fordianus* Pilsbry, as given by the latter author. The number of whorls in specimens from the same compartment of the mass of capsules is variable from four to six, and the length of the rostrum and canal is also subject to slight variation. Some specimens are also considerably broader than others. We have in the museum collection a specimen corresponding in size with Swainson's figure¹ of *Fusus aruanus* (= *proboscidiferus*) with the apical whorls still remaining intact. Another example is nine inches in length and still retains the nucleus, but in all the larger shells this part is broken off.²

"The apical portion of *Turbinella pyrum* is also very similar, but a close examination reveals the incipient characteristic columellar folds.

"In the description of *Perostylus* the apex is said to be decollated like that of *Rumina* or *Cylindrella*. Whether this is really the case has yet to be proved by further observation. There certainly is every appearance of there having been an embryonic shell which has become detached, but it is also certain that this takes

¹ Exotic Conchology.

² It is broken off in all the specimens in the Philadelphia collection.—P.

place within the egg-capsule, at an early stage of the creature's existence, for no such nucleus is attached to any of the specimens in the egg-capsules at hand which are of the same size as the shells figured by Mr. Pilsbry."

In conclusion it should be stated that *Fusus probosciferus* has been made the type of *Megalatractus*, a subgenus of *Hemifusus* (*Semifusus* Fischer!), by Fischer. There are good reasons for giving the group generic rank. It certainly does not belong to *Fusus*, the embryonic whorls being very different from those of the typical species of that genus. Neither can it be referred to *Hemifusus* as Fischer has done.¹ *Perostylus* will, of course, become a synonym of Fischer's group.

CATALOGUE OF LAND SHELLS OF LONG ISLAND, N. Y.

BY HENRY PRIME.

The time in making this collection embraces a number of years and I think it to be rather complete, having left no stone (or log) unturned in searching for the species. *Mesodon albolabris* and *thyroides* are dwarfed, and *Tachea nemoralis* does not compare as to size with those from Europe. The sea air may have something to do with this. The soil is of a sandy nature, as a rule, not adapted to the growth of sand snails.

Hyalinia arborea Say. Coldspring; Greenport; East Hampton; Huntington; Prospect Park, Brooklyn; Astoria; Myrtle Ave. Park, Brooklyn; Lloyd's Neck; Centerport.

Hyalinia binneyana Morse. Huntington.

Hyalinia cellaria Müll. Astoria.

Hyalinia indentata Say. Huntington.

Hyalinia milium Morse. Huntington.

Hyalinia nitida Müll. New Lots.

Limax agrestis Müll. Jamaica; Brooklyn; Huntington; Centerport.

Limax campestris Binn. Lloyd's Neck; Whitestone; Centerport.

¹ Manuel de Conch. p. 623.

Limax flavus Linn. Huntington. Was introduced in egg state among mushroom spawn. Brooklyn.

Limax maximus Linn. Brooklyn.

Patula alternata Say. Richmond Hill ; Lloyd's Neck.

Tebennophorus carolinensis, Bose. Lloyd's Neck.

Pallifera dorsalis Binn. Lloyd's Neck.

Helicodiscus lineatus Say. Brooklyn ; Huntington ; Lloyd's Neck ; Centerport.

Pupa contracta Say. Huntington ; Lloyd's Neck.

Pupa corticaria, Say. Huntington.

Pupa fallax Say. East Marion ; Coldspring. At Coldspring this species was at one time quite abundant among the brick (of what was left of a house cellar); these being removed the colony was broken up !

Pupa pentodon Say. Huntington.

Vertigo milium Gld. Coldspring.

Vertigo ovata Say. Shelter Island ; Greenport ; Coldspring ; Huntington ; East Marion ; Myrtle Ave., Prospect Park, Brooklyn ; Centerport.

Strobila labyrinthica Say. Huntington ; Lloyd's Neck ; Centerport.

Triodopsis introferens Bld. New Lotts. *Two* specimens were found *without the animal*, might they have been the playthings of some children ?

Mesodon albolabris Say. New Lotts ; Huntington ; Oyster Bay ; Prospect Park, Brooklyn.

Mesodon thyroides Say. Lloyd's Neck ; Prospect Park, Brooklyn ; Astoria ; Huntington ; New Lotts ; Richmond Hill.

Vallonia pulchella Müll. Huntington ; Centerport ; Coldspring ; Prospect Park, Brooklyn.

Tachea nemoralis. Yellow, plain, Flushing ; yellow, 2 bands, Astoria ; yellow, 4 bands, Flushing. A colony existed sometime since on Lloyd's Neck, but that locality being used as a public picnic ground, they in time *removed*.

Punctum minutissimum Lea. Coldspring.

Succinea avara Say. Coldspring.

Succinea aurea ? Lea. Peconic.

Carychium exiguum Say. Huntington ; Centerport.

Melampus bidentatus Say. Lloyd's Neck ; Huntington ; White-stone ; Coney Island ; Eaton's Neck.

GENERAL NOTES.

WITH the cooler weather of autumn conchologists will find indoor operations once more agreeable, and all who have availed themselves of the past season for adding to their knowledge of mollusk life or to their cabinets of specimens should try to share their harvests with others by telling of the interesting experiences in the field, of the occurrence of uncommon species or varieties, or the turning up of well known ones in new localities. Frequently random observations on the life habits of one or a few species are valuable. Who knows where most of our marine or land snails lay their eggs, how many there are, their form and size? And yet this is a vital point in the life of the species; and there are hundreds of others, some of which are sure to come to the knowledge of every collector. The difficulty is that such facts are too often esteemed of less worth than a fine lot of shells, and so are forgotten and left half seen or unrecorded. A collector's note-book should be as valuable as his cabinet, especially if the knack of sketching living animals, etc., is cultivated.

We hope that each of our readers will give us some fact or observation which has been made his or her own, during the past summer. Short notes dealing with single topics are always welcome, and have the advantage of being published promptly. Such a magazine as this one is always co-operative, and the more each gives, the more each receives. If anything you have seen interests *you* it is likely to be of value to others: but being interested one's self is a good test of what makes good reading. Meantime the editors will try do their part. In future, more attention will be given to notices of current literature of conchology than has been our custom in the past; and it is of course understood that our pages are freely open to all opinions, entirely regardless of those held by ourselves.

THE JUNIOR EDITOR of the NAUTILUS will be away from Philadelphia for some time after the middle of October, as he contemplates a palæontological trip to Alabama.

NOTE ON *HELIX GOSSEL*.—As the identity of this species is somewhat obscure, it may be well to clear it up in this place. *Helix gossei* was first described by Pfeiffer in the Proc. Zool. Soc. Lond., for 1846, p. 37, the description being repeated in Monographia, I, p. 30. In the later Conchylien Cabinet, *Helix*, p. 219, Pfeiffer de-

clared it to be a mere color variety of *H. subconica* C. B. Ad., described in 1845, and the figure he gives of his type amply confirms this opinion. In the Conchylien Cabinet, a few pages further on, Pfeiffer describes and figures a "*Helix gossei* C. B. Adams MSS." This name, of course, cannot stand, being preoccupied by that prior *H. gossei* of Pfeiffer himself, and this decision is not affected by the fact that Pfeiffer's first *gossei* is a synonym. This *gossei* of (C. B. Ad.) Pfr., I consider a race or variety of *H. nemoraloides* C. B. Ad., 1845, and it is practically covered by C. B. Adams' *H. pulchrior*, 1851. It is this form which caused Messrs. Simpson and Henderson some trouble in NAUTILUS for May, 1894, p. 5. The conclusion is that neither of the "gosseis" can stand, the first *gossei* of Pfr. being a synonym of *subconica*, and *gossei* C. B. Ad. MS. of Pfr. (later) becoming a synonym of *H. nemoraloides* var. *pulchrior*.—*Pilsbry*.

HELICES CARRIED BY BIRDS.—"From the throat of *Rallus pectoralis* Mr. J. A. Thorpe of the Australian Museum extracted the snail I now exhibit. This is a specimen of *Chloritis jervisensis* Quoy and Gaimard, a species common in this neighborhood, whose almost adult and uninjured shell measures 18 mm. in diameter, and which weighed, shell and animal together, 1.26 grammes. When found by Mr. Thorpe, to whom I am indebted for both facts and specimen, the snail was quite dead; as a test I immersed the animal in strong spirits without inducing contraction; since, however, its consumer had been killed forty hours earlier, the suffocation of the mollusc was to be expected. The bird was shot at Randwick, near Sydney, on the 19th May, 1894, by Mr. Newcombe, Deputy Registrar-General. In enumerating "Means of Dispersal," Darwin observes (Origin of Species, 6th ed. p. 372): 'A bird in this interval [eighteen hours] might easily be blown to the distance of 500 miles, and hawks are known to look out for tired birds, and the contents of their torn crops might thus readily get scattered.' In view of the above incident, this suggests a means whereby the geographical range of *jervisensis* might be considerably extended."—*Charles Hedley*, in *Abstr. Proc. Linn. Soc. N. S. Wales*, May 30, 1894.

PROF. H. E. SARGENT who has been pursuing biological studies at the Chicago University, has returned to Woodville, Ala.

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A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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NOVEMBER, 1894.

No. 7.

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REV. HENRY W. WINKLEY, Saco, Maine.

NOV 3 1894

THE NAUTILUS.

VOL. VIII.

NOVEMBER, 1894.

No. 7

DESCRIPTION OF A NEW SPECIES OF DORIDIUM FROM PUGET SOUND.

BY W. H. DALL.

Among specimens of mollusks collected in Puget Sound by the Young Naturalists' Association of Seattle, Wash., and forwarded for identification by Prof. O. B. Johnson, was a species of *Doridium*, a genus new to the region, and detected by Miss Adella M. Parker, in whose honor, at the request of the society, it has been named. The specimens were dredged in 30 fathoms at Eagle Harbor, Puget Sound.

Doridium adellæ n. sp.

Animal naked, about 16 mm. long, of a dark plum color, mottled with fine vermiculate spots of golden yellow; general form that of *D. carnosum* Cuvier, but with a shorter velum, half as long as the body and transversely truncate behind; the posterior free portion of the mantle short, obscurely bilobed, and without a flagellum; front edge of the velum slightly excavated; parapodia wide, the sole slightly longer than the body; shell internal, subconical, white covered with a brownish epidermis; pillar strong, reflected with a deep groove outside of it, the basal end projecting spur-like; nucleus small, depressed.

The shell is more conical and the cycloid wall of it narrower than in *D. carnosum*, and the excavated pillar much more prominent.

See Ann. Mus. de Marseilles, Zool. t. II, p. 45, pl. 2, figs. 42-44, 1885.

EDITORIAL CORRESPONDENCE FROM ALABAMA.

The following paragraphs from a letter received from the junior Editor of the NAUTILUS, written from Claiborne, Alabama, under date of Oct. 18th, will be of interest to our readers:

"* * * I arrived here [Claiborne] last evening, seven days out from Selma. While waiting for a train at Selma, I took a stroll along the river. The steep bank of bluish gray clay, probably forty or fifty feet in height, tempted me to look for fossils. A small *Ostrea*, or *Gryphæa*, a *Pecten* resembling *Camptonectes burlingtonensis*, and several parts of a large *Inoceramus* told me it was cretaceous. But the specimens were too scarce and poor to warrant the expenditure of much time. From Selma I went by train to Catharine, and thence to Prairie Bluff.

"It is at the latter place that the collector of cretaceous fossils is in his element. The bluff is over one hundred feet high, and in one place slopes gradually, giving one a good opportunity to collect. Fine large specimens of *Exogyra costata* and *Gryphæa vesicularis* were abundant. The shells of the latter were unusually thick and the lower-valve very convex. Perfect specimens of *Plicatula urtica* were also common. Finely preserved casts and, in many cases, the shells of numerous species of *Gastropods*, were abundant. Exceptionally numerous were: *Anchura spirata*, *Turritella ennerinoides*, *Rostellites texturatus*, *Pyropsis* sp., *Natica abyssina* and *Lunatia Halli*. Of the Cephalopods, I found *Nautilus DeKayi*, *Baculites ovatus* and *Ammonites* sp., in fair numbers.

"At Matthew's Landing, ten miles below Prairie Bluff, is the first good exposure of strata containing Eocene fossils. They are well preserved and very interesting, many that I found being new to the Philadelphia collection, *Cardita*, *Arca*, *Volutilithes*, *Pleurotoma*, being some of the principal genera. I found the spire of a large and handsome conch, reminding one of *Meloungena corona*, except that the projections on the angles of the whorls are nodulose instead of spinose, but I looked in vain for a perfect specimen.

On the west bank of the river, a short distance below Clifton, are high bluffs of indurated blue clay, and I found the first (and

last, so far) *Strepomatidae* of the trip, *Goniobasis solidula* Lea. The bank below the water-line was covered with them. In many places little springs trickled down the bank, and in these they were to be found to a height of twelve feet above the river level. Notwithstanding the very low stage of the river, I have seen no living *Unionidae*, and only a few worn and faded valves on Burford's Bar.

"In the the bluff at Peach Tree there is a narrow stratum of ferruginous sand containing a few Eocene fossils. Monday, the 15th, was spent at Gregg's Landing, four miles below Peach Tree. As there were no accommodations there for staying over night, we made every minute tell. It is a fascinating spot; great masses of a hard fossiliferous sandstone in which *Turritella mortoni* and *Ostrea compressirostris* predominate, and which has come from an upper stratum seventy or eighty feet above the present water-line, lay strewn along the base of the cliff, reminding one of Potomac Creek, Va. In the lower fossiliferous stratum, of a dark, indurate, sandy clay, *Cardita planicosta*, *Cucullea* sp., *Turritella humerosa*, *Turritella* sp. and *Calyptraephora trinodosa*, were the conspicuous forms.

"Bell's Landing, five miles below Gregg's, was next visited. The fossils were similar to those found at Gregg's, but among them were many rare species—rare in collections and rare at Bell's Landing.

"It was indeed singular how many uniques of some very interesting forms I found here. The stratum referred to above was also present here, but the upper one was for the most part a soft sand, and contained a greater number of species. As it was impossible to work the upper stratum in place, and as both were mixed together in the talus at the base of the cliff, I found it impracticable to keep the fossils of the two separate. I have not had time to hunt for land shells, but from appearances it seems somewhat unfavorable. On the bluffs it is extremely dry, while the lowlands are subject to overflow. To-morrow I go to work at the Claiborne fossils.

Yours sincerely,

"CHAS. W. JOHNSON."

POLYGYRA (STENOTREMA) HIRSUTA ON LONG ISLAND.

BY A. H. GARDNER, FORT HAMILTON, L. I., N. Y.

In the October number of the NAUTILUS I noted a catalogue of the land shells of Long Island, N. Y., by Mr. Henry Prime, which

seems, from my own investigations, to be very accurate. I venture, however, to supplement the same with a species hitherto unrecorded amongst the annals of the mollusk fauna of Long Island, and existing in what I believe to be a very circumscribed area. Most of the species Mr. Prime records I have found in localities other than those he names, and from his more extended investigations and those of his predecessors, Messrs. Temple Prime and Sanderson Smith—ranging over nearly the entire island—I am inclined to believe that the species of which I am about to write is to be found in but one locality, the one in which it was first discovered.

During the early spring of 1891 a colony of *Stenotrema hirsuta* was accidentally discovered by my friend, the late Mr. James Armstrong, a naturalist residing in Bay Ridge, L. I.; they were found in a small patch of woods, or rather, a small thicket, laying at right angles to a good-sized wood, at what is now 13th Ave. and 74th St., Brooklyn. The situation was a good one, being shady, and the ground covered with small fragments of boulders cast there at some past time from the surrounding fields. It had been undisturbed for years, as the position of the stones testified to; the leaves of many summers had fallen, decayed, and left their remains amongst the interstices in the form of a rich, dark mould.

The surrounding woods, for there are (or were) several in this immediate vicinity, had been thoroughly searched, both by myself and Mr. Armstrong, for many previous years, with a view of collecting specimens of the land mollusca, and had yielded to active and close search examples of *Helix* (*Mesodon*) *albolabris* and *thyroides*, *Zonites arboreas* and *indentatus*, *Helicodiscus lineatus*, *Strobila labyrinthica*, *Vertigo Bollesiana* and *milius*, but never a trace of the *Triodopsis* or *Stenotrema* groups, which, moreover, had never been noticed before by either of us in Long Island. *Stenotrema hirsuta* is at all times a rare shell in this part of the country. I know but of one specimen, collected at Highbridge, N. Y. City, and have heard of a few specimens being found on Staten Island by the late Dr. Hibbard, on the palisades of New Jersey. I have found them, but even there they are exceedingly scarce.

Now in this particular locality they abounded, and a very large quantity of specimens was procured.

The question arises how or by what means were they introduced. Evidently they were not the survivors of a species that had once flourished there, as in that case at least dead shells would have

been found elsewhere near the locality. The large quantities found would point to their having been native to the place for a long period of time. Why they had not spread is not strange when their habits are considered: they are slow in movement and retiring, loving to adhere to the under side of a stone, where moisture can be procured in the hot days of summer. Surrounded by conditions favorable to their existence, they neither seek nor require change of locality.

It is easy to account for the introduction in any place of a new plant or insect. The influence of the wind will scatter spores or seed vessels over a vast area; whilst when the locomotive powers of insects are considered, both aerial and terrestrial, it needs but a new condition, generally the scarcity of food, to cause an immediate migration, bounded only by arrival at the nearest spot indicated by instinct as the place where more suitable conditions exist, necessary to the preserval of life and development. But in the case of a snail, and especially such a slow moving one as *S. hirsuta*, it is different; to such an organism transition over an extended distance would be an impossibility, that is to say, by its own natural powers.

The only theory possible to solve this question is that they were carried there either as snails or the spawn of snails by some outside influence which we can only attribute to a winged animal capable of covering an extended distance continuously; for example, a hawk or other bird of strong flight may have left the Palisades of the Hudson river with dirt adhering to its claws containing the embryo "*hirsuta*," and winging its way across river and land, alighted on a tree at this spot, and in the process of perching, scraped off dirt and snail spawn, which dropped amongst the stones below. And again, the bird may have swallowed the *S. hirsuta*, and as it is a globular shell and of very hard substance, it may have escaped the grinding of the stones in the œsophagus, passed through the digestive organs, and been ejected at the locality with other excrement, and there perpetuated the species.

At any rate, this appears the only agency by which the species can have been introduced, and unless the same can be distinctly refuted, it forms a theory illustrated by the present example of the diffusion of certain forms of molluscan life over a continent—an agency probably uncommon and rarely put in force by the strange workings of Mother Nature.

N. B.—This locality has been recently invaded by civilization in the form of an electric road passing near it, bringing its attendant blessings (?), houses and their inhabitants. But as yet the colony exists; I collected specimens there as lately as last September.

EASTPORT NOTES.

BY REV. HENRY W. WINKLEY.

Chiton marmoreus Fab.

A variety differing from the type in size and color occurs at Eastport. The type occurs in size as long as $1\frac{1}{4}$ inches, and even a trifle more than that. The blue variety is not over an inch, the average being about $\frac{3}{4}$ of an inch. The type has the color of the interior white at the edges of the valves, deepening to rose color. In the variety, which may be called var. *caeruleus*, the rose color gives place to a delicate light blue. The outside is robin's egg blue. Though not common, this variety seems to be established. I have found it twice, and in small numbers.

Bucinum undatum Linn.

The type is abundant at Eastport. Largest specimen, $2\frac{7}{8}$ inches. (I have a specimen from near Old Orchard 4 inches long.) A variety (v. *plana*) occurs at Eastport and Grand Manan; size of largest specimen, $1\frac{7}{8}$ inches, resembling the type except in size and loss of waves. In some cases the waves remain in faint form; in some cases they are absent altogether. The type form at Eastport has the waves very heavy.

Margarita undulata Say.

Type is abundant; an albino form occurs rarely; it is about one-half the size of the type.

Terebratulina septentrionalis (young), *Menestho albula* and a few of the deep water starfishes were found at low tide in small numbers.

Astarte crebricostata—formerly common in 10 fathoms, could not be found.

The season has been a good one for collecting at Eastport. Some of the rare forms, like *Lunatia grænlantica* and *Bela Pingelii*, were found at 15 fathoms, and on the whole, there was a tendency among the deep water forms to the shallower water.

THE HABITS OF FLORIDA LITTORAL MOLLUSKS.

BY JOSEPH WILLCOX.

Although the following facts may be well known to some Conchologists, there are many undoubtedly who have not had the opportunity of observing the habits of southern shells. It is a very interesting scene to witness the actions of many mollusks in the shoal waters in the bays of Florida, and on the sand flats that are exposed to the air at low tide. Below is a list of some of the shells that are found above the water level at low tide on the southwest coast of Florida:

Fulgur perversum,	Aplysia,
F. pyrum,	Sigaretus perspectivus,
Oysters,	Callista gigantea,
Oliva literata,	Nassa vibex,
Fasciolaria gigantea,	Marginella apicina,
F. tulipa,	Melongena corona,
F. distans,	Conus proteus,
Cerithium atratum,	C. Floridanus,
C. nigricans,	Cardium isocardia,
C. muscarum,	Cardium magnum,
Cerithidea scalariformis,	C. muricatum,
Lucina Floridana.	

Aplysias do not remain voluntarily out of water at low tide, as they then become dry on the surface and appear to suffer for want of water, often emitting in such cases a large amount of purple fluid. They possess no power of locomotion on land.

The *Cerithium* usually crawl about on the sand soon after the water has receded, and remain above the surface until the return of

the tide. Their tracks may often be traced more than twenty feet.

Cerithidea scalariformis habitually crawls up the stems of grass, and lives the greater portion of the time out of water.

The *Cerithium nigricans* live in large colonies between high and low water marks.

Cardium isocardia crawls out of the sand soon after the water disappears; but they do not travel far. When put in a basin of salt water, they often close their shells with a lively snap.

Fasciolaria distans is the only shell, observed by the writer, which feeds upon the *Vermetus nigricans* colonies, into the tubes of which it inserts a long proboscis.

Fasciolaria tulipa is the only shell, in the knowledge of the writer, which makes an effort for freedom when held in the hand. It projects its body out of the shell and "slashes" about its long and sharp operculum with sufficient force to occasionally bring into view some of the blood of its captors.

The *Oliva literata* often lives in colonies. It emerges from the sand soon after the disappearance of the water, and crawls for a considerable distance.

Sigaretus lives usually under the sand, but at low tide it often comes to the surface; but it does not proceed far. It is a favorite morsel for the "littoral pigs," who root it out of the sand with avidity.

Lucina jamaicensis affects the muddy sand. They lie deeply buried under the surface, and seldom are seen on top of the mud. The *Lucina tigrina* probably possesses the same habit, as many dead shells are found in places where few are seen living.

The *Pholas costata*, I presume, lives below low water mark, as their shells are washed ashore in some places in great quantities. They also live in colonies in the muddy sand flats that are dry at low tide.

The shell reposes about 10 to 12 inches below the surface, but the animal can project its long siphon to the surface, through a hole permanently kept open.

In a future article we propose giving the results of observations upon the feeding habits of some Florida mollusks.

NEW FORMS OF WESTERN HELICES.

BY HENRY A. PILSBRY.

The Pacific Slope has been proven by the researches of many collectors to be richer in varietal forms of *Helices* than any other part of the United States; but although there are a large number of well-marked local varieties, there has been a tendency to oversplit them on differences of no racial value. The following forms are believed to be sufficiently individualised to require names.

Although superficially some species such as *arrosa*, *tudiculata* etc. are very much like the European group *Arionta*, others like *Campylaea*, and still others from Lower California are like *Euparypha*, it is the writers belief that the American forms are not closely allied to these European groups, but rather to the forms found in Japan, China and the Philippines, the resemblance to European types being a case of "convergence" of one character, the shell, and not extending to the less readily modified viscera. Other allies of the Californian group are the *Hemitrochus* of Florida and the greater Antilles. In Mexico another allied group, *Lysinoe*, is found; but the genuine Californian type extends southward along the mountain axis as far as the Argentine Republic. All these American, and the East Asiatic groups are more nearly allied to each other than any of them are to the European *Helices*.

The earliest name for this group of forms is the rather cumbersome term *Epiphragmophora* of Döring; and it is proposed to use this in a generic sense, to supercede *Arionta*, *Aglaiia* and *Euparypha* of American writers. The history of all these snails and their names, with a discussion of their probable ancestry and migrations, will be found in the writer's Guide to *Helices*, now in press.

Epiphragmophora ellipsostoma n. sp.

Shell globose-depressed, with low-convex spire, round periphery and almost covered umbilicus; thin; color a greenish straw tint, with one supra-peripheral brown band, surface shining, showing irregular growth wrinkles, and closely, somewhat spirally wrinkle-malleate all over, much as in the thin forms of *E. tudiculata*; the spiral tendency of the wrinkles more marked below. Whorls 4, the apical $1\frac{1}{2}$ forming a rather large nuclear shell; last whorl deeply descending in front, a little constricted behind the basal lip. Aperture very oblique, short-elliptical, obliquely truncated by the penultimate whorl; peristome rather narrowly but evenly and well reflexed

throughout, dilated at the columella insertion and almost covering the umbilicus. Alt. 12·5, greater diam. 20, lesser 16·2 mm.

Belongs to the *E. rowelli* group, but differs from other species in its malleation. From *tudiculata* and its allies, it differs widely in the elliptical mouth, coarse apex and fewer whorls. The same characters and its sculpture remove this shell from *E. traskii* and its several varieties described by Hemphill.

Locality, "San Juan del Norte" (Gabb). Probably on the east coast of Lower California.

NOTES AND NEWS.

VARIATIONS OF PLEUROCERA ALVEARE Conrad.—In L. and F.-W. Shells, part 4, (*Strepomatidae*), page 50, Mr. Tryon says: "The species is very variable in length," leading one to infer that the other features were more constant. Such is not the case.

Specimens from Cypress and Shoal creeks, Ala., present such a difference that on first sight the mature shells of one stream would not be taken for the same species as those from the other.

From Cypress creek they have the folds or tubercles on each whorl and the striae on the base well defined. From Shoal creek they are eroded on the spire, giving the shell a cylindrical appearance; body whorl smooth and the striae of the base faint or wanting; a number from both streams are two-banded; the upper band causes the dark spots Mr. Lea mentions in his description of *pernodosa*. In both streams they were found on rocks in the current.—A. A. Hinkley, Dubois, Ill.

NEW LOCALITY FOR UNIO ELLIPSIS LEA.—While collecting in the vicinity of Florence, Alabama, the past summer, eight specimens of this species were found in the Tennessee river.—A. A. Hinkley.

MR. EDW. W. ROPER, of Revere, Mass., gave his friends in Philadelphia and Washington a short but pleasant call recently.

Z. CELLARIUS IN WESTERN PENNSYLVANIA.—I found 3 specimens of *Zonites cellarius* Müll., 2 living and 1 dead, from the Phipps Conservatory in Allegheny City, and as the 3 specimens came from 3 different greenhouses, they must have obtained a pretty good foothold. None of the shells were fully mature, the dead one being the largest.—Geo. H. Clapp.

THE RATE OF GROWTH OF HELICES.—I have placed mature *Helix appressa* in a box the middle of May. They have laid eggs,

the eggs have hatched, and the animal has grown to maturity by the first of November. With *Helix alternata* the growth was much less, hardly making more than one-half that of *H. appressa*.—Chas. S. Hodgson, *Albion, Ill.*

ARGONAUTA ARGO on the East Florida coast.—A specimen of this species measuring $7\frac{3}{4}$ inches diameter, and perfect in every respect, has been obtained by Mr. Wm. P. Stanley. It was found about 10 miles below Palm Beach, and contained the animal when cast ashore.

RECENT PUBLICATIONS.

OBRAS MALACOLOGICAS DE J. G. HIDALGO. Madrid, 1894. The name of JOAQUIN GONZALEZ HIDALGO has long been a familiar one to conchologists acquainted with recent French and Spanish literature of mollusca; and whoever has used the more extended works "*Moluscos Marinos de Espana, Portugal y las Baleares*" and the "*Moluscos Terrestres*,"—works indispensable in the study of the shells of Southwestern Europe—will hear with pleasure of the publication of the "*Obras Malacologicas*." This *magnum opus*, of which several parts lie before us, will consist of three portions: works relating to the fauna of Spain, works upon the South American fauna and publications on the land shells of the Philippine Islands. Of the former two we may judge in advance by the magnificently illustrated volumes named above, and the "*Moluscos del Viaje al Pacifico*."

That upon the Philippine fauna, now in course of publication, aims to present a summary of the literature of each species, with valuable critical notes on the variations, distribution, etc.; and it is illustrated on a scale which leaves little to be desired. The land snails of the Philippines are among the most beautiful of any region, and it is only fair to say that for the first time justice is done them in the splendid plates of Hidalgo's *Obras*. The *Helices* and *Cochlostylas* are illustrated in the parts already issued, and we hope to have the *Bulimi* and *operculates* before long. The text is characterized by its moderate and conservative spirit, refreshingly free from "*nouvelle ecole*" vagaries, but well abreast of the times.

The work will doubtless be of the greatest assistance to all students of this rich fauna, and we hope that its talented and industrious author may succeed in bringing it to a good completion.

LIST OF TEXAS MOLLUSCA collected by J. D. Mitchell. This catalogue embraces both marine and fresh-water forms, and adds many localities to the published records of Texas shells.

NOTES ON SOME MARINE INVERTEBRATA FROM THE COAST OF BRITISH COLUMBIA, by J. F. Whiteaves. A new Pecten, *P. (Pseudamusium) vancouverensis* is described and figured, and an adult specimen of *Turricula cidaris* is for the first time illustrated.

A CONTRIBUTION TO A KNOWLEDGE OF INDIANA MOLLUSCA, by R. Ellsworth Call (from Proc. Ind. Acad. Sci., III). The present paper is a preliminary list of the Indiana mollusk fauna, showing what has already been done toward an exact knowledge of the conchology of that State. Only authentic locality references are given, and nothing is admitted to the list on the strength of its occurrence in neighboring States. Of land shells, 58 species are enumerated; fresh-water univalves, 47 species; bivalves, 102 species. No less than 53 species were originally described from Indiana localities. A bibliography is given, both of special and general works bearing on Indiana shells. The "Contribution" is a step in the right direction, and will be welcomed by both Indiana collectors and those interested in the distribution of United States shells generally.

NOTES ON THE MIOCENE AND PLIOCENE OF GAY HEAD, MARTHA'S VINEYARD, MASS., ETC., by W. H. Dall (Amer. Jour. Sci., Oct., 1894). The result of Dall's visit to this locality, examined by Lyell 50 years ago, and by numerous other geologists later, are important, verifying its reference to Miocene, in which it corresponds to the Chesapeake, "in all probability to the upper part of the Chesapeake, certainly not lower than the St. Mary's fauna, and probably between that and the Yorktown beds." At about 80 feet above sea level a small patch of shell fragments was found, in a stratum of sand, which is considered Pliocene. *Nucula shaleri* and *Macoma lyelli* are described as new from the Miocene; and *Chrysodomus stonei* Pilsbry, originally described from stray specimens washed ashore on the New Jersey coast, was found, thus fixing its position, hitherto unknown, in the Miocene.

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A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

ASSOCIATE EDITOR :

C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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DECEMBER, 1894.

No. 8.

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DEC 4 1894

THE NAUTILUS.

VOL. VIII.

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No. 8

A SHELL HUNT FORTY FEET UNDER THE SEA.

BY C. HEDLEY, SYDNEY, AUSTRALIA.

To widen the fairway of Port Jackson (Australia), a submarine reef is being removed. An opportunity of going down with the divers employed thereon was kindly offered to myself and a scientific friend by the officer in charge of the operations. So tempting an invitation was, of course, accepted with delight. Often in imagination had we wandered on the ocean floor, peering into ghastly wrecks of ships sunk long ago, fighting with some huge shark or monstrous octopus, and gathering treasures of science or heaps of gold. Now our dreams were to come true and we were indeed to tread that fairy-land. We might not have the luck of the mariner in the song who

“ Fell overboard in a gale,
And found down below where the seaweeds grow,
Such a lovely maid with a tail,”

but we should certainly pluck strange growths at the bottom of the sea as one might pick flowers in a meadow.

A trim launch sped with us from Circular Quay down the famous Sydney Harbor, past bay after bay, some lined with wharves and shipping and some with trees growing to the water's edge, by rocks and white sandy beaches, past point and headland gay with villas and gardens, or sombre with eucalypt forest. So familiar was the

scene to us, that we smoked and chatted, unmindful of its beauties, till we reached a flotilla of punts and barges moored near the Heads.

After a cup of tea with the overseer, we prepared for our descent by divesting ourselves of boots, coat, vest and collar. A couple of laborers officiated as my *valets de chambre*, wrapping me first in thick flannel socks, trousers and jacket, and then in a canvas over-all garment which left only the head and hands uncovered. The hands being left bare, the sleeves were secured at the wrists by rubber cuffs and bracelets. My feet were thrust into a pair of enormous boots, each sole of which was weighted with 25 pounds of lead. Bending my head, two men placed over it a huge diver's helmet and screwed it into a brass collar of the canvas dress. My costume completed by slinging on chest and back two large metal weights, I was told to rise. Thus encumbered, it was no slight exertion to get up, take three steps to the ladder, and descend into the water knee-deep. There I halted while my signal cord was belted round my waist; my air-tube, which reminded me of a garden hose, was screwed to my helmet and the pump commenced to force air through it. Finally an attendant screwed a plate-glass front, the size of a saucer, into my helmet; from the inside, this last operation resembled the closing of a coffin-lid. Some one tapped my helmet twice, the submarine signal for "all's well," and I started.

Stepping off the bottom rung of the short ladder, down I went, till the keel of the barge loomed up, rose and passed me—down, down into the green sea water, watching the silvery bubbles stream upward—down, down, down, as the water darkened. That sensation of gliding down into an emerald abyss, was the weirdest, dreamiest thing I ever felt. Then so gently did I alight, that I merely noticed that I had ceased to fall. At my feet I saw rock and sand and seaweed; looking up, I saw a monster in a helmet with two ropes leading away up to where the sky ought to be. The monster's face showed through his little window as a big, fair moustache and a pair of kindly blue eyes. Fetching out of a capacious trouser pocket a small school slate, he wrote, "How do you feel? Shall we go on?" and held it up. Taking his slate, I wrote, First rate; go on." He read the message, gravely rubbed the slate clean with his finger, pocketed it, and held out his hand. I grasped it and we started for a walk at the bottom of the sea.

Then I noticed a pain in my ears; the compressed air was hurting me. To cure it, I went through the motion of swallowing once

or twice. Feeling more comfortable, I "began to take notice," as they say of the babies. The light was bright enough to see small things plainly twenty feet away, but the water strangely magnified familiar objects. A shoal of little fish passed us, swimming under our arms and between our legs in the most ridiculous way. I tried to take one with my hand, but it deftly turned and avoided my grasp. The guide, seeing my attempt, pinned one to the ground with an iron rod he carried, and handed it to me; another he stabbed and caught as it swam by. Before we had gone far I had lost all sense of time, space or direction, and became too confused to know whether I had travelled east or west, ten yards or a hundred, in ten minutes or half an hour. A queer sensation was that of having escaped from the law of gravity; it seemed just as easy to walk up as down a cliff—we usually walked on our toes, sloping from the ground at an angle of forty to sixty degrees. When too much air is pumped down, the submarine pedestrian is unduly buoyant, and his aims to clutch a shell from the ground must be comically like the dodging and staggering of a drunken man.

A little dell lay before us choked with rank seaweed, through which we strode waist-deep like plunging into a tangle of fern in some damp valley on the land. My guide reached out, picked something off a broad frond, and handed it to me. It was a *Doris*, a lovely creature, whose like I never saw in books, striped with purple on a milk-white ground. It began to crawl over my fingers quite unconcernedly. I clapped my hands and tried dumbly to express my delight by patting my companion's big fist. He replied by offering me the slate, on which I wrote, "Very good; put him in the bottle." Rubbing out my words, he wrote, "Send down the bottle," tied the slate to the rope and jerked the latter four times. Away went rope and slate to the regions above. In response to an answering signal, the slack was hauled in and my collecting-jar descended tied to the rope. In turn, we tried in vain to open it. Although our correspondent above had filled the bottle with water, the pressure at our depth so sealed it that we could not raise the stopper. With a message on the slate, "Open this bottle and send it down open," we sent the jar aloft. When it was lowered to us the second time, I found that my *Doris* had slipped unobserved through my fingers, and so I lost a possible new species, the rarest treasure I was to see that day.

Continuing our travels in the dim water-world, we passed through a field of sponges. Not the brown, round masses of the bath-room, but radiant growths of scarlet (*Raphyrus hixoni* and *Halicondria rubra*) and purple, here and there great open oscula, tempting one to poke in a mischievous finger. Some grew in tufts like moss, some expanded like a dainty vase (*Phyllosiphonia caliciformis*), some forked like branches of trees and some spread like a lady's fan. One abundant species, about the size and shape of an orange, was pure ice-white, studded with golden dots that almost glittered (*Leucondra* sp.). Of all these we gathered what we could, pricking our hands sore with sponge spicules as we worked. When, on the morrow, our ravished beauties lay dead on a table in the museum, they had faded sadly from their pristine splendor. Among the sponges grew purple *Boltenia pachydermatina*, a pear-shaped head upon a slender stalk, like tulips in an earthly garden.

For a surprise, the diver held up before my face and pressed an *Aplysia*. From it flowed a violet stream which stained the water for two feet around, hiding hand and mollusk in the cloud. One of my last captures was an exquisite nudibranch, which swarmed on the broad fucus blades. In hue it was the blue of a summer sky, flecked with blood-red dots and stripes. I had now grown weary; not of searching for wonders, but of supporting the heavy diving armor, and was content to be drawn up again to the world of air and sunshine, which I had quitted three-quarters of an hour before.

On reflection, I found the reward of my under-water foray to be, not a hoard of specimens, but a better appreciation of the circumstances under which marine life exists. Our party of four had only observed, dead or alive, *Chamostrea albida*, *Vola fumata*, *Trigonia lamarcki*, *Struthiolaria scutulata*, *Drillia oweni*, *Cassis pyrum*, *Cypræa xanthodon*, *Astraliun tentoriforme*, *Ranella leucostoma*, *Aplysia keraudreni*, *Chromodoris bennetti*, and two undetermined *Doris*. Molluscan life seemed, on the spot I explored, to be less plentiful than at low-tide mark. Perhaps, however, the difficulties under which I labored as a beginner in the art of diving, impeded me from finding what was really there. After seeing the rough sea floor, one wonders that a dredge should capture as much as it does. A rich harvest probably awaits a conchologist who should seriously practice diving as a means of collecting.

VERTIGO MORSEI, n. sp.

BY DR. V. STERKI.

Shell large (for the group), cylindrical-turriculate, with a rather acute apex, imperforate rimate, with few obsolete striae of growth, shining, translucent; whorls six, rather slowly and regularly increasing, the last scarcely higher than the penultimate and rather narrower, somewhat sloping towards the base, slightly ascending at the aperture; suture deep; aperture lateral, scarcely oblique, comparatively small, inferior and palatal part well-rounded, the latter with an angular impression and slightly protracted in about its middle, the upper half more strongly curved, peristome everted; on the palatal wall, at some distance from and parallel with the margin, a moderate crest, behind it a deep and large impression over the palatal folds, and in front of it a groove corresponding with the impression at the auricle; inside the crest there is a distinct callus of the same color as the shell; apertural lamellae and folds typically nine: three on the parietal wall (the same as in *V. ovata*), the largest whitish; two on the columella, the superior strong, vertical above, then in an angle turning horizontally, the inferior horizontal, lamelliform, thin, high and directed obliquely upward; basal small, sometimes double, rarely 0; palatals high, and rather long, curved and directed upward; suprapalatal small, nodule-like.

Size: alt. 2.7, diam. 1.3; apert. alt. 0.9, lat 0.8 mill.

Soft parts not examined.

Habitat: Kent County, Michigan.

This magnificent *Vertigo* has been collected by Dr. DeCamp and kindly sent for examination by Mr. Bryant Walker. There were seven specimens, all fully mature, well-formed and almost exactly alike. Yet there are some slight differences, as they may be found in all forms of this group: in one example the inferior parietal tooth is wanting, in another the basal only trace-like, and in a third the same is double, as frequently found in *V. ovata*. With the latter species, *V. morsei* has much resemblance, especially in the aperture: the configuration and the "teeth" are the same, but the inferior columellar, and the two principal parietals, are rather larger, and markedly directed upward. The main difference is in the number and relative size of the whorls: while in *V. ovata* they are five, and rapidly increasing, the last predominating; in our species there are six, slowly increasing, the last, and consequently the aperture, com-

paratively small. This is a radical difference, and gives the shell quite another aspect, so that there can be no question about its being distinct. But *V. morsei* is also decidedly larger, *V. ovata* not, or little, exceeding two millimeters of altitude.

The species is named in honor of Mr. E. S. Morse, who has so considerably promoted our knowledge of the Pupidae.

New Philadelphia, Ohio, Nov., 1894.

A NEW CHITON FROM CALIFORNIA.

BY W. H. DALL.

Genus *LEPIDOPLEURUS* Risso.

Section *Lepidopleurus* ss. Valves adjacent, jugal area obscure, not separated from the pleural tracts; lateral areas distinct, or feeble, when all the sculpture is feeble. Type *L. cajetanus* Poli. Mediterranean.

Section *Oldhoydia*. Valves separated by narrow extensions of the girdle, reaching to the jugum; jugal area prominent, sculptured differently from the pleural tracts and extending in front of them between the sutural laminæ; lateral areas not differentiated; valves heavy, strongly sculptured. Type *L. (O.) percerassus* n. sp.

Lepidopleurus percerassus n. sp.

Shell solid, strong, small, of a pale pinkish-brown with a darker brownish girdle which appears rather narrow in the dry state; scales very minute, partly debiscent, chaffy, with occasional slender spinules resembling hairs; scales on the base crowded, minute, sandy; an extension of the girdle is prolonged between the valves on each side as far the jugum, the surface of these sinuses is also minutely scaly with occasional spinules; valves thick, white below, moderately arched with the prominent jugum forming a sort of keel; near the points of insertion the valves are heavily callous below; the sutural laminæ are short, smooth and separated at the median sinus by a prolongation of the jugum in advance of the anterior margins of the pleuræ; sculpture of the jugum consisting of punctate fore-and-aft parallel grooves with some small elevated transverse ridges anteriorly; the rest of the valve has, on each side, six or eight vermicular ridges divaricating toward the posterior edge of the valve and irregularly corrugated with sharp, fine, elevated

lamellæ crossing the interspaces transversely but fading out on the ridges; head-valve with minutely nodulous concentric ridges; tail-valve highest at the subcentral, not very prominent mucro, in front sculptured like the intermediate valves, behind the mucro like the head-valve. Length about 14, width 5.75, height 2.5 mm., in the dry state. The dry girdle about half a millimeter wide.

Specimens obtained by Mr. T. S. Oldroyd from a stone pulled up from about 75 fathoms in the Santa Barbara Channel off San Pedro, California.

This species, for which a section named in honor of Mr. Oldroyd is proposed, is very remarkable. The girdle recalls that of *Deshayesiella* Carpenter, but is extended in such a manner as to partly separate the shelly portions of the valves. The very callous surfaces of the interior, according to Mr. Pilsbry, are unique in the group. Most of the species of *Lepidopleurus* are comparatively thin, and though *L. cajetanus* is a solid shell, none of the species are as heavy as the present one in proportion to their size. The conspicuous and forwardly produced jugum is unique in the family. The type is in the National Museum, and will be figured later.

PATELLA (HELICIONISCUS) NIGRISQUAMATA REEVE.

BY CHAS. T. SIMPSON.

In the collection of the National Museum are twenty specimens of *Patella* bearing the above name received from Frederick Stearns, the U. S. Exploring Expedition, W. K. Fischer, and the Lea-Chamberlain Collection—the latter credited to “Dr. R.” by Mr. Lea, and probably from Ruschenberger. One other specimen of the same name is in the museum from the Rich Collection without locality.

These vary from young shells less than an inch in diameter to those which are more than $3\frac{1}{2}$ inches in length. There can be no doubt that the above name is correct, as all the specimens agree fairly well with Reeves' description and excellent figures in the *Cochologia Iconica* (Vol. VIII, *Patella*, species 3, plate II, figs. 3^a and 3^b).

The species described as *P. boninensis* in the NAUTILUS (Nov., 1891, p. 79), was characterized by its author as having a large central muscular callus, and two diverging dark bands from the anterior head segment.

Our large series shows every possible variation in the development of these characters, from young specimens in which no scar or tails (for they look very much like squirrel tails) are visible, to old, solid shells with a heavy, snowy, swollen callus, and having these brown wings very strongly developed.

The same characters are seen in *Patella (Helcioniscus) argentata* Sowb., better known as *P. talcosa* Gld. *H. clypeator*, which Mr. Pilsbry places with *Nacella*, on account of slight differences in anatomical characters, but which, conchologically, seems closely allied to *P. argentata*, and in other species.

In short, there can be no doubt that this scar and the curious radiating brown lines are merely adult characters which are developed in quite a number of species. I quite agree with Mr. Geo. W. Taylor in believing that this species does not come from the west coast of South America, but is probably confined to the north-western part of the Indo-Pacific region.

THE VIRGINIA COLONY OF *HELIX NEMORALIS*.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

There appeared in the *NAUTILUS*, of Nov., 1889, a paper under the above title, setting forth some very interesting facts regarding the variations exhibited by a colony of *H. nemoralis* at Lexington, Va. Prof. J. H. Morrison, who collected the shells studied, took considerable interest in the matter at that time, and had gathered together a good deal of information additional to that given in the above-cited paper. I have, therefore, been quite disappointed not to see any publication by him on this subject, or any evidence that the colony has received further attention.

It is scarcely necessary to dwell on the extreme interest attaching to the history of this colony. Here we have a variable species introduced into a new country, and varying in a most extraordinary manner under the influence of the new environment. The peculiar variations are very numerous, though, in the main, tending entirely in one direction—to the splitting of the normal bands. Although the number of individuals thus varying is considerable, very few of such have exactly the same formula, whereas, several of the old European variations occur in numerous specimens.

It appears, in the highest degree, probable that these peculiar variations are congenital and not acquired during the lifetime of

the individual,¹ in which case we have an example of environment modifying the germ-plasm—the odds against the variation being only accidentally coincident with the changed environment being enormous.

In 1889, the above-mentioned changes had taken place in the colony, but time was needed to show whether they would increase in number and degree; or whether, as seemed more probable, the old European varieties would eventually assert themselves, and swamp the rest. In either case, the result would be very interesting, and now that five years have elapsed, it is extremely desirable that some one should make a new investigation and report in detail. It is really astonishing that no one has yet done so. The colony was, in 1889, so evidently in a condition of unstable equilibrium, that it seems certain that changes must have occurred in the interval, tending to the predominance either of the old or the new (split-band) type.

Believing that Prof. Morrison would publish, I did not follow my paper of 1889 with further observations, but it will be as well now to put the following on record:

(1) Lexington, Va., received from Morrison one of each of the following, Oct. 26, 1889:

Helix nemoralis mut. *guettardia* Moq.

Helix nemoralis mut. *arcelinia* Loc.

Helix nemoralis mut. *petiveria* 10345 = *requienia* Moq.

Helix nemoralis mut. *libellula* 1(234)5 Kregl.

Helix nemoralis mut. *libellula* 123(4)5 nov.

Helix nemoralis mut. *libellula* 0030₅ Ckll. (juv.).

Helix nemoralis mut. *libellula* 12₃45 Ckll.

Helix nemoralis mut. *libellula* 1₂23_x(45) nov. (juv.).

Helix nemoralis mut. *libellula* 12₃3(45) nov. (juv.).

(Morrison had another example.)

Helix nemoralis mut. *libellula* 12₃3(4₄)5 nov.

(Morrison had another example.)

Helix nemoralis mut. *libellula* 10₃45 nov. (juv.).

Helix nemoralis mut. *libellula* 12_x3_x45 nov. (juv.).

Helix nemoralis mut. *libellula* 1₂34(5₅) nov. (juv.).

Helix nemoralis mut. *libellula* 123₃45 nov.

Helix nemoralis mut. *libellula* 12_{xx}3_{xx}45 nov.

Helix nemoralis mut. *libellula* 003₄5 Ckll.

¹ If so acquired, it must be in very early life, as, in many instances, the variations were recorded from immature examples.

Helix nemoralis mut. *libellula* 12₃(45) Ckll.

Mr. Morrison also sent me word of the occurrence of mut. *libellula* 0030₅ Ckll.

(2) Lexington, Va., received from Morrison in November, 1889.

H. nemoralis mut. *libellula bimarginata* 12₃45 nov.

(the bands tend to coalesce.)

H. nemoralis mut. *libellula* 12345 Moq.

H. nemoralis mut. *libellula bimarginata major* 00000 Moq.

(thin, max. diam. 28½ mm.)

H. nemoralis mut. *libellula major* 12345 Moq.

(max. diam. 26¾ mm.)

H. nemoralis mut. *petiveria* (12345) = *richardia* Moq.

H. nemoralis mut. *petiveria umbilicata* 123₄5 Ckll.

(nov. mut. *umbilicata*, shell more globose, umbilicus open.)

H. nemoralis mut. *libellula* 1234445, nov. = *morrisonia* nov.

(extra bands 44, much thinner than 4.)

H. nemoralis mut. *albescens* 00000 Moq.

(pale yellow, like mut. *subalbida* of *hortensis*.)

(3) Lexington, Va., not seen, recorded by Morrison in litt., Nov. 16, 1889.

H. nemoralis mut. *libellula* (12)(345) Kregl. (one).

H. nemoralis mut. *libellula* 120(45) Kregl. (one).

H. nemoralis mut. *libellula* 1₂045 nov. Morr. (two).

H. nemoralis mut. *libellula* (123)45 = *nilssonina* Moq. (one).

H. nemoralis mut. *libellula* 1234455 nov. Morr. (one).

H. nemoralis mut. *rubella* 123(45) Moq. (four).

H. nemoralis mut. *rubella* 10345 Moq. (three).

H. nemoralis mut. *rubella* 123X45 Ckll. (one).

(4) Lexington, Va., not seen, recorded by Morrison in litt. Jan. 2, 1890. This is the most extraordinary series of all; about all the band-variations are new.

Mut. *petiveria* 12_{3xx}45.

Mut. *libellula* 1(22)045.

Mut. *petiveria* (12)3(45) Moq.

Mut. *libellula* 1234(55).

Mut. *libellula* 1₂₃45.

Mut. *libellula* 12(33)45.

Mut. *libellula* 12_x3_{xx}45.

Mut. *libellula* 1₂3_x4(55).

Mut. *libellula* 12(3₃)_x(45).

Mut. *libellula* 12₂3₃4(55).

Mut. *libellula* 123(45) *bimarginata*.

Mut. *libellula* 1(22)3(45).

Mut. *libellula* 123₄(4445).

Mut. *libellula* 123₄5 Ckll.

Mut. *libellula* 1(2₂)345.

Mut. *libellula* 123_{xx}45.

Mut. *libellula* (1₁2₂3₃4₄555).

Mut. *libellula* 123_{xx}(45).

Mut. *libellula* 123₄45.

Mut. <i>libellula roseolabiata bimar-</i>	Mut. <i>libellula</i> 123(44)5.
<i>ginata</i> 12345.	Mut. <i>libellula</i> 1234 ₄ 5.
Mut. <i>libellula</i> 123(4 ₄)5.	Mut. <i>libellula</i> 1(22)345.
Mut. <i>libellula</i> 123(₄₄)5.	Mut. <i>libellula</i> 1 _x 03 _x 45.
Mut. <i>libellula</i> 12 _x 345 Ckl., bi-	Mut. <i>libellula roseolabiata bimar-</i>
<i>marginata</i> .	<i>ginata</i> (12345).
Mut. <i>libellula</i> 12 _x 345 Ckl.	Mut. <i>libellula</i> 1 ₂ 3 ₄ 45.
Mut. <i>libellula</i> 12 ₃₃ (4445).	Mut. <i>libellula</i> (12 ₃₃₃ 45).
Mut. <i>libellula</i> (1 _{2xx} 3 ₃)(45).	Mut. <i>libellula</i> (12 ₂₃₃ 45).
Mut. <i>libellula</i> 103(44)5.	

It should be explained that a split-band bracketed, as (44), means that it is split, but joins near the mouth of the shell.

NOTES AND NEWS.

MR. T. WAYLAND VAUGHAN is now engaged in geological work on the scientific corps of the U. S. Geological Survey.

MR. GILBERT D. HARRIS, formerly of the U. S. Geological Survey, has, after spending the summer abroad, taken up the work of his new appointment at Cornell University, where the valuable collection of mollusks, of which Dr. Newcomb was so long curator, is under his charge, as well as the Palæontological Department.

THE LONG BEACH (CALIFORNIA) CONCHOLOGICAL CLUB elected the following officers for the next year: Miss I. M. Shepard, President; Mrs. M. Darling, Vice-President; Mrs. Terry, Treasurer and Secretary, with Miss E. Lowe her assistant.

The Club is to hold its meetings twice a month. The following are the charter members: Miss E. Lowe, Mrs. M. Darling, Mrs. E. Cushman, Mrs. R. Preston, Mrs. Terry, Mrs. Craig, Miss I. M. Shepard and Mrs. Dial. At the next meeting, to be held December 1, new members will be received. The Club has been studying and collecting for a year, but had not before formally organized.

They held their first Annual Meeting and Reception at the home of Miss E. Lowe, on the evening of October 6. A short program was given and letters of greeting read from Dr. W. H. Dall, Mr. H. Hemphill and Prof. Josiah Keep. Ice cream and cake were served in shells, and the rooms handsomely decorated with palms, shells, kelp, and smilax.

The Club would be glad to hear from any and all interested in the same study, and will make a special study and collection of our local shells or shells of Los Angeles Co.

AMNICOLA OLIVACEA PILS.—In April, I visited the original lo-

cality (Huntsville, Ala.) and was surprised to find this species in vast numbers. The stream has a mud bottom which is much indented with cow tracks. In these the *Amnicola* had congregated—not as a layer on the surface, but as a solid mass. To get an idea of how many there were I scooped up the contents of three holes, and after washing them thoroughly, found I had a full quart of the living animals. There must have been bushels of them in the few rods of stream which I inspected. The stream receives some of the city sewerage, so it is probably a good feeding-ground.

The geese which infest the neighborhood do not seem to care for this species.—H. E. SARGENT, *in lit.*

NEW PUBLICATIONS.

THE LIFE AND WRITINGS OF CONSTANTINE SAMUEL RAFINESQUE, by Richard Ellsworth Call, is announced to be published in January next. The volume will be in quarto form, and issued in paper only. It will contain several full-page illustrations, one of which will be a portrait of its subject. A complete bibliography of the writings of Rafinesque, on every subject, comprising over four hundred titles, will be included, together with a certified copy of his will, one of the most remarkable testamentary documents ever probated. It will prove of exceptional value to those interested in botanical, conchological, or ichthyological matters.

A MONOGRAPH OF THE LAND AND FRESHWATER MOLLUSCA OF THE BRITISH ISLES, by J. W. Taylor, F. L. S., is announced as in press. The object in issuing this work is to bring together, as far as practicable, all reliable information bearing upon the study of the British Land and Freshwater Mollusca. It will aim to combine the information upon all aspects of the study, and thus form a standard work of reference as well as a reliable text-book upon British Land and Freshwater shells. The first volume will be devoted to general characters of the shell, the morphology of the animal, geological and geographical distribution, habits, parasites, etc. The second volume will be devoted to the treatment of species individually, and will aim to give accurate descriptions and faithfully colored figures of the typical shell and the chief varieties of every species; the various organs of the animal will be described and illustrated in the text, and full lists of localities, with a full synonymy will also be given, as well as observations upon the habits and peculiarities of each species. Mr. Taylor's work promises to be a timely and useful one. Fuller notice will be given upon the appearance of the first volume.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

EDITOR :

H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

ASSOCIATE EDITOR :

C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

Vol. VIII.

JANUARY, 1895.

No. 9.

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EXCHANGES,

The following space is to be given to exchanges. Notices not exceeding three lines, will be free to subscribers as long as our limit of space will allow.

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Helix alauda, *H. amplecta*, and many other land, fresh-water and marine shells; in exchange for shells from any locality; send lists and receive mine.

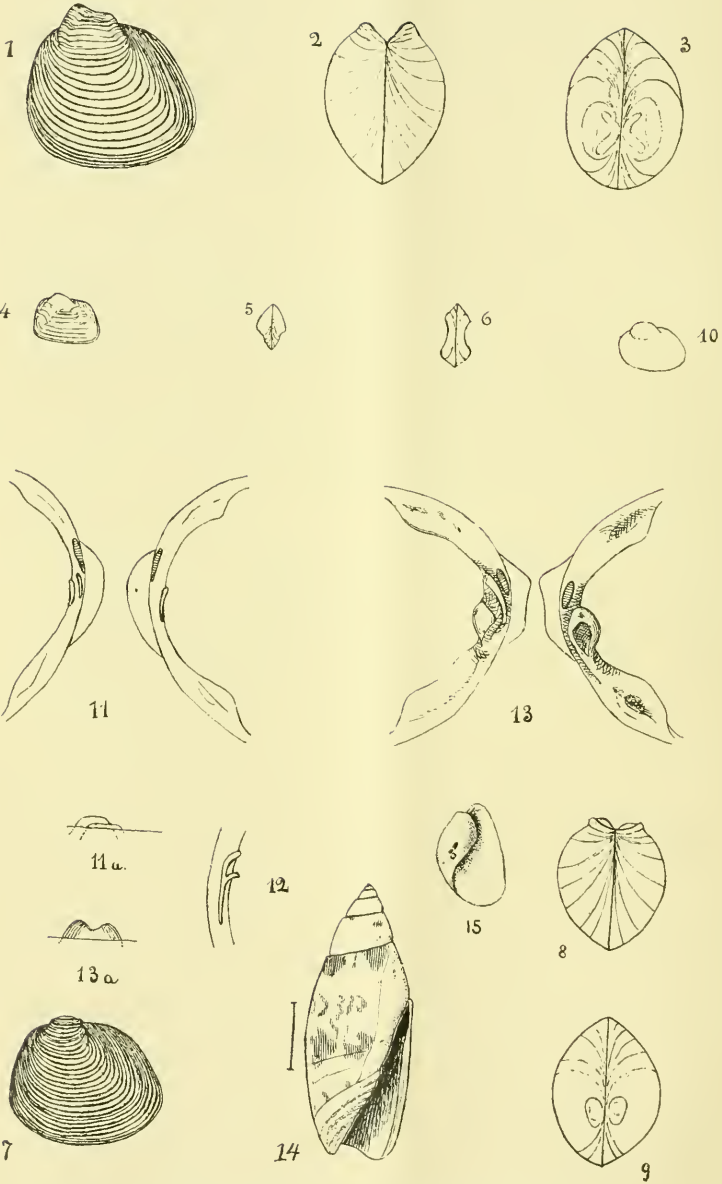
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OFFERED—A short list of Maine shells. Desired—Land-shells.

REV. HENRY W. WINKLEY, Saco, Maine.

WANTED:—To Exchange New and Rare species of Alabama Land and Fresh water shells for same from other localities. Also general list of 600 species. Send lists.

H. E. SARGENT, Woodville, Ala.



1-6, 13, 13a, *Pisidium cruciatum* Sterki. 7-12, *P. punctatum* Sterki.
14, *Olivella gracilis* v. *Gaylordi* Ford. 15, *Haminea virescens* Sowb.

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THE NAUTILUS.

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TWO NEW PISIDIA.

BY DR. V. STERKI.

Pl. II, Figs. 1-13.

Pisidium cruciatum, n. sp. Figs. 1-6, 13, 13a.

Shell minute, inequipartite, oblique, subtriangular in outline, high, ventricose, regularly and comparatively coarsely striated, straw colored; anterior part moderately long with an oblique, nearly straight edge above and the end rounded; posterior part short, the end somewhat obliquely truncate, superior margin rather strongly curved, scutum scarcely, scutellum little marked, the latter forming a rather distinct angle; inferior part moderately curved; beaks prominent, each with two ridges diverging at nearly right angles, together forming a cross on the upper aspect of the shell, each of the ridges ending in a nodule of which the posterior is larger and more prominent; navel rather thick, whitish; hinge very stout, list strong; cardinal teeth rather large, and strongly projecting inward from the hinge list; in the right valve one, strongly curved, posterior part thick, anterior thin, lamellar, the ends united by a lamella so as to form a deep groove into which the posterior tooth of the left valve articulates; in the left valve two, the posterior (inferior) stout, massive, the other, superior and a little anterior, rather short, fine, lamellar, oblique, little curved; lateral teeth large, high and pointed in the left, strongly projecting inward in

the right valve, the latter with no (or only traces of) outer teeth, and a deep groove; between the cardinal and the lateral teeth the hingelist is rather deeply excavated, so that all teeth are markedly isolated; muscle insertions visible; ligament, short, strong.

Size; long 1.9, alt. 1.9, diam. 1.4 mill.

Soft parts slightly yellowish.

Habitat: Tuscarawas River, at New Philadelphia, Ohio.

Figure 1 represents an adult specimen, 2 the posterior, 3 the dorsal aspect, 4-6 a young example, 0.8 mill. long; fig. 13 the hinge; 13a the dorsal aspect of the right cardinal tooth with an indentation; figs. 1-6: scale 15×1 .

The singular shape of the umbones is so characteristic that this species will be recognized at once, and cannot be mistaken for any other. And also in the formation of the hinge it is quite unlike any other *Pisidium*, so that it holds a peculiar position in the genus. In the hinge structure it is very illustrative and instructive for the understanding of the different forms of cardinal teeth; yet this is not the place to discuss the subject at length.

Our species is rather variable, even so that all specimens from one place in the river are different in size and shape from those of another place scarcely half a mile distant. It measures from 1.6 to 2.1 mill. (One specimen 2.1:2.1:1.6, another 1.7:1.7:1.3 mill.), 1.9 being about the average; the margins may be rather obtuse or somewhat acute, the beaks more or less prominent, and the anterior nodule more or less marked. As a rule there are no outer lateral teeth in the right valve, yet traces of them may be seen in some specimens. Also in the formation of the cardinal teeth there is some variation, as the one in the right valve may be indented in its middle, at the angle, and so there are apparently two teeth (fig. 13a).

Pis. cruciatum is not rare in the Tuscarawas River, where, so far, it has only been found, but probably it has a wider distribution, and may even have been collected and taken for the young of some other species, owing to its minute size. In October and November, 1891, it was first found, and some specimens were sent to several conchologists, so to Mr. E. W. Roper, who also recognized it as a new species. In 1893 and 1894 about a hundred were collected, in all stages of growth. Only few of them are quite mature, and almost globular, most adolescent, and, though apparently old, much less inflated. They live in mud among aquatic plants and dead leaves,

and, as a rule, are covered with a black or brown coat, sometimes so thick that they appear to be globules of dirt, and only a sharp eye may recognize them from the hair-like free line along the edge. Some old specimens are badly eroded.

Pisidium punctatum, n. sp. Figs. 7-12.

Shell minute, inequipartite, high, oblique, strongly ventricose, almost globular, regularly and sharply striated, microscopically rugulose, whitish; anterior part moderately long, the edge above oblique, almost straight, end slightly angled, rather inferior; anterior part short, truncate, slightly angular above, rounded below; superior and inferior margins moderately curved, the former rather short, the latter long; scutum little, scutellum moderately marked, both forming slight angles; vertical section heart-shaped, horizontal, short, lanceolate-rhombic; margins very slightly acute; beaks moderately full and prominent, with a longitudinal, slightly oblique ridge (sometimes obsolete) below the culmination; navel moderately thick, whitish, with crowded, small pits, from which it appears as if dotted; hinge moderately strong; cardinal teeth fine, in the left valve two, lamellar, longitudinal, about equally long, a little curved, almost parallel, the upper little anterior; in the right valve one, longitudinal, little curved, lamellar, the posterior end slightly thickened; lateral teeth rather small and thin, in the left valve one, pointed, in the right valve two, the outer quite small; hinge-list fine, rather regularly formed; ligament rather long and fine.

Size; long 1.8, alt. 1.6, diam. 1.3 mill.

Soft parts colorless, rest whitish.

Habitat: Ohio; Tuscarawas River, Bear Run, tributary to the Mahoning River, Portage Co., a spring brook at Rootstown Station, Portage Co., emptying into the Cuyahoga River (Lake Erie and St. Lawrence drainage); in all places collected by the writer.

Figures 7-9 represent an adult, 10 a young specimen, scale 15×1 ; fig. 11 the hinge, 11a the dorsal aspect of the cardinal teeth in the left valve; fig. 12 shows a remarkable abnormality of the cardinal tooth in the right valve.

This species resembles somewhat *Pis. compressum* Prime, in having a ridge or appendage, but not in the same place, as it stands on the outside, below the culmination of the beaks, while in the mature *P. compressum* it has its place rather on top. The shape of the shell is different, and the size is very much smaller, its bulk being only about one-tenth of that shell. And while the upper part of

the posterior margin in *P. compressum* is rounded or flattened, it is sharp, somewhat "pinched" in *P. punctatum*. In this the shell is purely whitish, or light straw colored, the latter more so when dry, while the mature *P. compressum* is always more or less grayish. A marked feature is the finely and densely pitted interior surface of the shell, the dots being distinctly perceptible through the shell from the outside. Yet this is not unique, as I have also seen it in other *Pisidia*. Some specimens show not a trace of the appendages on the beaks, yet they are evidently identical.

In the Tuscarawas River this *Pisidium* appears to be rare, as only thirty were taken, twelve of them in one place, in company of about five hundred *P. compressum*, most of the latter quite young to half grown, *P. cruciatum* and a few *P. abditum*, which is common in pools and ditches. More frequent it is in the Bear Run, where about 120 were collected, but only one-fourth of them adult. Those from the spring brook mentioned above, are somewhat larger, averaging 2.0 millimeters long.

These two well characterized and very small *Pisidia* are a valuable addition to our molluscan fauna. Besides them there are several other undescribed species from our country at hand. These small mussels have been somewhat neglected and a more assiduous collecting and closer study will doubtless bring to light not only more unknown forms, but also interesting geographical relations.

New Philadelphia, Ohio, Nov., 1894.

HAMINEA VIRESCENS. (Pl. II, fig. 15).

BY MRS. M. F. BRADSHAW.

One afternoon in August, when the low tide of the month occurred, we went to our favorite reef of rocks to see what of interest new or old we could find.

There were acres of mussels with *Purpura saricolu* in great numbers and various colors wedged in between them. These *Purpuras* are graceful in form and often beautifully colored and striped, and I never tire of them. There were several species of *Acmaea* and *Fissurella volcano* plentiful enough, and as we reached the outside of the reef where the waves dashed at us threateningly, we found a few small *Haliotis cracherodii*, some sea urchins and starfish. These

last we left to the enjoyment of their home in the deep pools among the rocks.

But I wanted to tell you of the real "find" of my summer. On the flat surface of the rocks, and nearest the shore, were small indentations and shallow crevices. While looking into these in search of a possible new Chiton, I saw a gray object which I picked up with the remark that here was some sort of key-hole limpet.

My little companion says: "What is a key-hole limpet?" and so I took out my knife and was about to dissect it to give her a lesson in conchology, but to my surprise I found I had something quite new to myself.

I had very rarely picked up on the beach a small, pale yellow bubble shell never more than $\frac{3}{8}$ inch in length, but had no idea whereabouts this little mollusc had lived. But here in my hand was a real live Haminea, the pale greenish shell so nearly transparent, that it was excusable to at first think it was internal instead of on the creature's back.

The shell was about $\frac{5}{8}$ inch in length, and as we found none larger, was probably an adult, and it covered less than one-third of the mollusk.

The animal itself was a slimy gray globule, not pleasant to touch, and one could not help wondering what possible use or protection was this fragile, inconspicuous, insufficient shell.

Further search revealed several dozen, but they were hard to find even after we knew exactly what to look for, so nearly were they like their surroundings.

After that we searched for Haminea in all similar places for several miles of our coast, but never again found them; so I am still of the opinion that they are rare in this locality.

Monoceros engonatum is not rare on this coast I believe, but I never found them until that day, I got two, one a fourth of a mile from the other. Careful search failed to reveal more, though these individuals could not be living alone, and I have no doubt had only taken a short excursion, leaving the rest of their families safely at home.

The field of my observations has been but limited; situated about midway between Los Angeles and San Diego, but I think it is a locality rich in the number of its species.

NEW FORMS OF AMERICAN SHELLS.

BY H. A. PILSBRY.

Gastrodonta (Pseudohyalina) lateumbilicata n. sp.

Shell resembling *Ps. limatula* in color, texture and sculpture, but much depressed, the upper surface almost flat, last whorl of much smaller calibre, the umbilicus very much wider, shallow, its cavity widely open and saucer-shaped, much as in *Helicodiscus lineatus*. Alt. 1.4, diam. 4.3 mm.

Hab., near Woodville, Alabama. Coll. by H. E. Sargent, whose labors in northern Alabama have been remarkably fruitful in increasing our knowledge of the conchology and mammalogy of Alabama, as well as in his chosen work as an educator.

Somatogyrys Sargenti n. sp.

About the size of *S. aureus* Tryon, but shouldered as in *S. subglobosus* Say, and imperforate. Shell globose-turbinate, light olive-green, smooth except for fine growth lines. Whorls about $4\frac{1}{2}$, those of the spiré very convex and separated by deep sutures; last whorl shouldered above, flattened toward the suture, large and convex. Aperture large, ovate, a little flattened on the parietal side, broadly rounded below, narrowly rounded above, and angular at the upper insertion of the lip. Columella concave, moderately heavy, the callus becoming wider at the umbilical region; parietal wall with a transparent callus layer. Alt. 6, diam. 5 mm. Mud Creek, a tributary of the Tennessee R., Ala.; coll. by Prof. H. E. Sargent.

This species differs from *S. integer* and the closely allied species or varieties *depressus*, *aureus* and *parvulus* in its shouldered whorls, planulate below the suture. It has no such heavy columellar callus as *S. currierianus*; and it is a smaller species than *S. subglobosus* (isogonus) of Say, with wholly closed umbilicus and differently formed columella.

RANGIA THE PROPER NAME OF THE MACTROID GENUS GNATHODON.

BY THEODORE GILL.

Mr. Dall, in the NAUTILUS (VIII, 27) and Proc. U. S. Nat. Mus., (XVII, 91), has shown that the generic name *Gnathodon* was

introduced before *Rangia* for the same genus of Mactroid bivalves. Nevertheless, the former name must give place to the latter, because it had been previously used in zoology for a different genus. Ever since Mr. Dall communicated to me the results of his investigations, I had a dim recollection of having seen the name used in another sense, and that *Rangia* would have to stand, but could not recall any circumstances connected with it. Having had occasion recently to refer to the Plectognath fishes, I recalled that the name *Gnathodon* had been given to a combination of the genera *Tetrodon* and *Diodon*, because neither of the latter was applicable to all the forms of the composite genus. It was Goldfuss in 1820 who thus used the name in his "Handbuch der Zoologie." I have not access at present to a copy of Goldfuss' work,¹ but have verified my recollection by reference to Cuvier and Valenciennes' "Histoire Naturelle des Poissons," (I, 226), where, in a summary of the work, the name is thus mentioned "*Gnathodon (Diodon Tetrodon.)*". Of course, the name is not active in ichthyology, and, also of course, it is not recorded in any of the Nomenclators of zoology, but, in accordance with the law "once a synonym always a synonym," the previous application of the name in ichthyology precludes its use in conchology.

A NEW VARIETY OF OLIVELLA.

BY JOHN FORD.

Some months ago, I received from my friend, Mrs. E. M. Gaylord, of Alameda, Cal., a suite of Olivella which had been found by her in a box of shells that apparently came direct from the Gulf of California.

All of the associated species were well known Gulf shells, and as the Olivella were in the same fresh condition as the rest, there was no reason to doubt that the entire lot had been secured simultan-

¹Handbuch der Zoologie, von Georg August Goldfuss, Nuernberg, 1820, being the Zweite Abtheilung of the Dritter Theil of Dr. G. H. Schubert's Handbuch der Naturgeschichte. *Gnathodon* appears on page 100, is suitably diagnosed, and includes as sections *Orthogoriscus* Schn., *Diodon* L. and *Tetrodon* L.—ED.

eously, and, probably, at the same locality. In view of this conclusion, also of the fact that the specimens are in some respects distinct from any heretofore known to me, or, so far as I can learn, to any writer on conchological matters, I assume the responsibility of naming and describing them as follows :

Olivella gracilis Gray. Var. *Gaylordi* Ford. Pl. II, fig. 14.

Shell similar in outline to *O. gracilis*, but much smaller, general color bluish-grey, with a well defined interrupted band of a lead-black hue bordering the upper part of the final or body whorl.

Smaller spots of a like hue also appear at the upper edge of the fasciole. Circling the middle portion of the whorl is a number of irregular brownish lines, which also occur less prominently on the fasciole. In some specimens a splotch or two of the same color as the interrupted band referred to, appears on the upper part of the preceding whorl. Apex very acute and free from spots. Length of aperture rather more than one-half that of the shell ; dorsal portion of the extreme base creamy white. Average length of specimens 9 to 10 mm., width 3.2 to 4 mm. Hab., Gulf of California.

Mrs. Gaylord, for whom the variety has been named, is not only a practical collector, but an unusually earnest and capable conchological student also. It gives me great pleasure, therefore, to associate her name with the beautiful specimens referred to.

FERUSSACIA SUBCYLINDRICA AND TWO NEW SPECIES IN JACKSON CO., ALABAMA.

H. E. SARGENT, WOODVILLE, ALA.

The pleasure which thrills the field naturalist upon locating with in his range, a species previously unknown to the region, must be experienced to be appreciated. It is my privilege at this writing to report three such finds.

Late last November, at the end of a shell hunt of two hours, which had among other things brought to light several fine specimens of *H. obstricta* Say var. *y*, I chanced to detect for the first time a specimen of *F. subcylindrica* L.

Its station was a flat surface rock about thirty feet square, at an angle of 30°, with a north exposure. Having a sack with us, my

assistant and I proceeded to "bag" the leaf mould. While doing so another new thing attracted my attention. Upon comparing it with a single specimen of *Z. limatulus* Ward in my collection, I pronounced it the same with a question and sent it to the Editor for verification. He writes "Your *limatulus* I find, on comparing with typical specimens, are much flatter and have wider umbilicus. I therefore, call them *Gastrodonta* (*Pseudohyalina*) *lateumbilicata* n. sp."

Daylight failing and being a mile from home in a ravine 500 feet below home level, and only the bed of a mountain torrent for foot-path, we could only carelessly collect the bushel of mould which we brought away, doubtless leaving many specimens. Upon assorting the material the following was the result:

Ferussacia subcylindrica L., 245. *Pomatiopsis lapidaria* 48.

Gastrodonta lateumbilicata Pils., 200.

G. capsella Gld., 25.

Z. indentatus Say, 18.

G. interna Say, 18.

Helicodiscus lineatus Say, 5.

Patula perspectiva Say, 51.

Helix spinosa Lea, 1.

H. stenotremu Fer., 3.

H. inflecta Say, 4.

A subsequent visit to another part of the same ravine resulted in the finding of 50 more specimens of *G. lateumbilicata*, but none of *F. subcylindrica*. I have since received two specimens of the latter from another locality not far distant.

This trip also resulted in the finding of two living specimens of *Gastrodonta acerra* Lewis, the gem of our American *Zonites*. A number were also found which had been broken into and eaten. Query; may not the rarity of this species be due to its delicate shell and habit of remaining among the loose leaves rather than burying itself in the mould as does its more thrifty neighbor *Omphalina laevigata* Pfr.?

This is thus far the only station at which I have found *G. acerra*.

A new species of *Somatogyrus* for which the name *Somatogyrus sargenti* Pils. is proposed, is found in considerable numbers, twenty miles northeast of here in a spring, tributary to Mud Creek, which is in turn tributary to the Tennessee River. It is found attached to the dead leaves in company with one species each of *Physa*, *Planorbis*, *Limnaea* and *Goniobasis*.

NOTES AND NEWS.

The Conchologists Exchange was started so oddly (on a postal card) and ended so abruptly—and without an index to either volume, that we are constantly receiving letters of inquiry regarding its contents, numbers, etc. We once proposed to make a reprint, but could not obtain sufficient subscribers to warrant it. We now propose to print an index of both volumes, if enough of our subscribers want it to pay for the cost of printing. The index will contain a list of contributors with the titles of their articles, and a list of the species mentioned. Those wishing an Index will please send twenty-five cents to the Editors. It will be printed as soon as sufficient money is received.—H. A. P. and C. W. J.

There is being built at Finderne, N. J., a large Casino Building, one room of which is to be devoted to Natural History. Mr. Thomas Morgan, of Somerville, N. J., has been appointed Curator. He intends placing there his entire collection. Any donation of specimens will be thankfully received.

DEAD SNAILS.—On the 14th of last April, (1894), I turned over a log in the woods in Miami Co., Ohio, and found, all in a heap, the following shells: 74 adult *Helix elevata*, 38 young of same, 1 *H. profunda*, 9 *H. alternata*, 1 *H. albolabris* and 2 *H. hirsuta*, making in all 125 individuals. They were all dead but well preserved, and many were clean inside so that they would make good cabinet specimens. Besides these perfect shells there were many so broken that they could not be readily identified.

How can we explain this? Did these mollusks seek the warmth to be derived from a number huddling together, or were they acted upon by the common impulse of protection? Were they destroyed by insects, or did they perish by the cold? The preceding winter was an unusually mild one, and the size of the log and quantity of leaves which surrounded them would preclude the latter theory. The fact that so many were so thoroughly cleaned inside would seem to show that some insects as ants had made an attack upon them and eaten them. What are the enemies of our common snails? I have often found perfectly clean dead shells under logs.—G. D. Lind, Lebanon, Ohio.

An interesting study of *Scissurella*, illustrated with figures of the living animal and dentition, by A. Vayssi re, of Marseilles, is pub-

lished in the current number of the *Journal de Conchyliologie*. The external features as well as the dentition differ very widely from *Pleurotomaria*, the teeth being as in *Trochidae*.

In Abstr. Proc. Linn. Soc. N. S. Wales, meeting of Sept. 26, 1894, Mr. John Brazier retracts his former opinion that *Patella kermadecensis* is not from the Kermadec group, and quotes from a pamphlet published in 1887, stating that on Macauley Island there occur "large limpets (as big as small saucers and good eating)."

The last number of the *Journal de Conchyliologie* contains a portrait and biographical sketch of Dr. Paul Fischer.

PUBLICATIONS RECEIVED.

ON A MOLLUSCAN GENUS NEW TO, AND ANOTHER FORGOTTEN FROM AUSTRALIA, By Charles Hedley (Proc. Roy. Soc. Vict., 1894).—*Lucapinella* is identified from Australia with two species, *nigrita* Sowb. and *pritchardi* Hedley. *Scyllæa pelagica*, recorded by Cuvier from W. Australia years ago, has lately been collected at Port Philip by Mr. J. B. Wilson.

DESCRIPTION d'un Hélicéen nouveau provenant de la cote occidentale du Maroc, par Ph. Dautzenberg (Bull. Soc. Zool. de Fr. 1894, p. 17).—*Helix (Jacosta) Renuti* is described and figured. We cannot distinguish it from *H. argonautula* Webb & Berth., a species referred by European authors to *Ochthephila* or *Discula*, but really belonging to *Jacosta*.

THE LAND AND FRESHWATER MOLL., NEW PHILADELPHIA, O., by Dr. V. Sterki.—A list freely annotated with Dr. Sterki's habitual critical acumen recording 151 species. The new forms described are *Pupa curvidens* var. *gracilis*, "intermediate in shape between the type and *P. holzingeri*;" *P. pentodon* f. *curta*; *Vertigo ventricosa* v. *elutior*; *Planorbis exacutus* var. *rubellus*. *Gundlachia* is reported, and two *Pisidia* described in the preceding pages are noticed.

UEBER BINNEN-CONCHYL. der Küstenzone von Rio Grande do Sul, von Dr. H. von Ihering.—From the study of land snails found in Quaternary deposits the conclusion is reached that formerly the region in question was wooded, and more favorable to snail life than the present sandy expanse with sparing grass growth. In the living fauna a remarkable new genus of *Succinidæ* occurs, like a *Hyalimax* with completely internal, spireless shell.

DIE SUSSWASSER-BIVALVEN JAPANS, von H. von Ihering (Abh. Senck. naturforsch. Gesellsch.).—In the discussion of the species, this work supplements Kobelt's Fauna Japonica, describing several new specific forms. In the Japanese bivalve fauna, v. Ihering finds only East Asiatic types, and those occupying the entire Holarctic tract (such as *Margaritana margaritifera*). There are no peculiar forms of more than specific value, the fauna being merely a part of that of the adjacent Siberian and Chinese countries, unspecialized except in the specific characters, and many of the species are very near those of the mainland. It is interesting to find that these results coincide with the facts known in regard to the freshwater gastropods and the land shells. Except that the mollusk fauna of Japan has a more southern aspect than that of the adjacent mainland (due to the warm ocean current, the "Gulf stream of Japan"), there is no difference of any importance in zoogeography.

PRELIMINARY LIST OF THE MOLLUSCA OF ARKANSAS, by F. A. Sampson (Ann. Rep. Geol. Surv. Ark., Vol. II).—81 species are the result of several years work by Mr. Sampson, not including *Unionidæ*, which will be treated separately. The State has been little known to conchologists hitherto, and the present catalogue supplies data for the southwestern range of a considerable number of species. It is judiciously annotated, and illustrated with woodcuts of *Triodopsis edentata* Sampson.

A BIOLOGICAL EXAMINATION OF LAKE ST. CLAIR (Bull. Michigan Fish Commission, No. 4).—The present preliminary account details the methods adopted by the Michigan Fish Commission, with brief lists of the various forms of life, a map of the lake, etc. The mollusks were studied by Mr. Bryant Walker and listed on pp. 43, 44. More elaborate reports on the principal groups are in preparation.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

EDITOR :

H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

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C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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No. 10.

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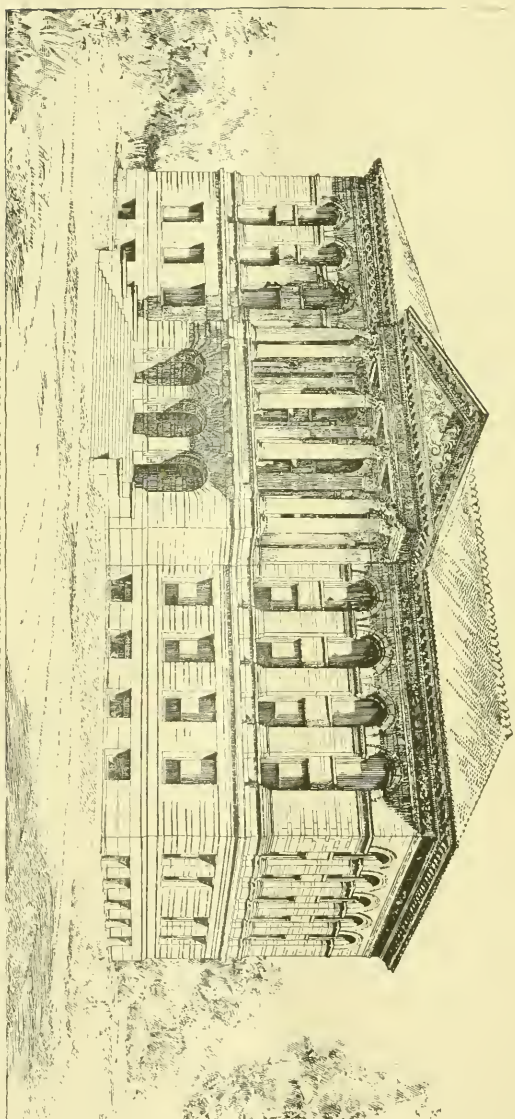
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THE CHICAGO ACADEMY OF SCIENCES LINCOLN PARK

PATTON AND FISHER, ARCHITECTS.

THE NAUTILUS.

VOL. VIII.

FEBRUARY, 1895.

No. 10

A GLANCE AT THE CHICAGO ACADEMY OF SCIENCES.

BY FRANK C. BAKER, SECRETARY.

In 1857, a society for the promotion of science, was formed in Chicago, taking the name of "The Chicago Academy of Natural Sciences." About \$1,500 was subscribed, a room taken in the Saloon Building, corner of Clark and Lake Streets, a few cases were made, and a museum was begun. In 1859, the society was incorporated by the name of "The Chicago Academy of Sciences."

In the winter of 1863-4, several prominent citizens of Chicago resolved to found a Scientific Museum in the Metropolis of the Northwest. A large sum of money was accordingly subscribed, an Act of Incorporation, (1865) as now published, was obtained and the Academy was placed upon a solid foundation. Mr. Robert Kennicott was appointed first Director of the Museum. Collections rapidly rolled in and rooms were taken at the Metropolitan Building, corner of Randolph and La Salle Streets. In 1865 Mr. Kennicott, with a party of young naturalists went to Alaska to survey a route for a telegraph line, then proposed to connect North America with Russia. From this expedition Mr. Kennicott never returned. He died suddenly of heart failure on the banks of the Yukon River. After the death of Mr. Kennicott, Dr. William Stimpson was appointed Director of the Museum.

June 7, 1866, the building in which the Museum was placed was partially destroyed by fire. The collections were much damaged,

and parts were wholly destroyed. This calamity brought the question of a permanent building to head, and a lot on Wabash Avenue, north of Van Buren Street was purchased and a fire-proof building erected. The first meeting was held January 28, 1868. The building was of brick 55 feet by 50 in area, and 50 feet high; the floors were of brick and iron the stairways and principal doors of iron, and the windows were covered with iron shutters. The basement was used for laboratory and storeroom; the first floor for library and offices, while the whole upper part, surrounded by two wide galleries, was occupied by Museum. From this time until the great fire the growth of the Academy, under the skillful management of Dr. Stimpson was rapid, and much valuable original work was done.

On the 9th of October, 1871, this building, in spite of the fire-proof qualities which it was supposed to possess, was totally destroyed in the great conflagration which laid Chicago in ashes,—specimens, library, manuscripts, and apparatus—all that was left of the once invaluable collections was a sheet of printed paper and a few pieces of broken pottery. Within twelve days after the fire, however, a meeting was held and steps taken towards a restoration of the Academy. A circular was issued inviting the sympathy and help of corresponding societies, which elicited many immediate and liberal responses. The loss of his priceless manuscripts so prostrated Dr. Stimpson that he died on the 26th of May, 1872.

It was soon determined to rebuild upon the old site, and upon the same plan modified by such improvements as experience could suggest. Upon the front of the same lot a business block of the first class, four stories in height was erected. The restored building was occupied in the fall of 1873. The funds at the disposal of the Academy being insufficient for their needs, they borrowed such additional sums as were necessary, securing the lender by a mortgage upon the whole property. They estimated that the income from the property would provide a sinking fund by which the original indebtedness would be paid when it became due. The scheme, however, proved disastrous. The new building did not pay the interest on the indebtedness, and after a term of years, in process of law, the whole property was lost to the Academy.

When, in 1886, the Academy was finally driven from its home on Wabash Avenue, the Exposition Company received the collections within its building upon the lake front and paid the expense of their

maintenance. But in its turn, the exposition company was ousted and its building destroyed. The property of the Academy was sent to storage where it remained for several years. In 1891 when the affairs of the Academy seemed to have reached their lowest ebb, a proposition was made to unite its fortunes with the University of Chicago, then just organizing. This the Academy was not willing to do, feeling that in time the identity of the organization would become lost in that of the University. In 1892 a generous citizen of Chicago Mr. Matthew Laflin, seconded and aided by his son George K. Laflin promised to give a sum adequate for the purpose of erecting a building which should stand for all time as the home of the Academy. In addition to this, it was ascertained that it was possible for the commissioners of Lincoln Park to aid in the prosecution of such an enterprise by offering a site and additional endowment. The result is one of the most perfect museum buildings situated in one of the most beautiful parks in the world. In June, 1893, the corner stone was laid and Nov. 1, 1894, the building was formally thrown open to the public.

The new building is a plain rectangular structure measuring 150 by 50 feet. The material of the building is Bedford stone and the architecture is Romanesque. Over the central doorway is the inscription MATTHEW LAFLIN MEMORIAL. The interior is decorated in old gold and ivory giving a soft tone to the light. There is electricity, running water, electric bells, elevator, and all the modern improvements which go to make up a perfect museum.

The library contains 5000 scientific works. It communicates with the museum by two stairways. The museum hall is 150x50x30 feet, with one wide gallery. Upon the main floor there are 24 large cases, in the gallery the same number with the addition of a large rail case. Unlike most museums *there is not a dark corner in the building*, from cellar to garret.

The collections consist for the most part, of North American productions, and are most complete so far as the valley of the Mississippi is concerned. In Mollusca, the collection is rich in North American forms.

With a new building and the best of facilities, it is believed that the Academy will again occupy a prominent place among Scientific bodies, and regain the prestige and fulfil the promise of its earlier days.

ON A NEW SPECIES OF HOLOSPIRA FROM TEXAS.

BY WM. H. DALL.

Holospira pasonis n. sp.

Shell white, mostly smooth but hardly glossy, of eleven and a half whorls; two and a half smooth, inflated, nepionic whorls, the apex flattish, followed by several whorls which are minutely ribbed in harmony with the incremental lines, the ribbing gradually becoming obsolete over most of the shell but reappearing on the last whorl, especially the basal part, sharper and somewhat crowded just behind the reflected lip; umbilicus closed or reduced to a minute chink; suture distinct, sutural edge continuing as a keel to the reflected margin of the aperture; aperture very short necked, almost circular broadly reflected; the pillar, as usual in the genus, tubular above the last whorl, the axis externally simple but somewhat flexuous. Lon. 22.5, max. diam. 6.5 mm. El Paso County, Texas, from Mule cañon at an elevation of 4000 feet. This species is nearest to *H. coahuilensis* W. G. Binney, which has one or two more whorls, the last two proportionately more attenuated with more extended, sharper and more distant sculpture, and obtusely keeled or compressed base resulting in a much more triangular and narrower aperture. It is not particularly close to any of the other species hitherto described, the *H. semistriata* Stearns being quite distinct. A marked character is the evenly rounded basal part of the whorl just behind the lip.

The specimens were procured by a correspondent of Mr. J. A. Singley.

MEGATEBENNUS BIMACULATUS.

BY MRS. M. F. BRADSHAW.

One day last September I found a curious and interesting mollusk. On a ledge of rocks, so high as only to be reached by the waves at the highest tides, there was a hollow containing a barrel or more of water.

Poking around in this I saw what appeared to be a bit of flesh. I took it out, thinking I had found a small *Lucapina crenulata*,

whose shell is—or appears to be—internal. But this one wore his shell upon his back for what purpose I do not know, for it was too small for protection, and the creature himself was so unpleasant to look at, no beauty of shell could redeem his ugliness.

Red-brown in color, warty, even the inadequate shell was a dull greenish grey; not a single pretty feature!

Only an enthusiast could have taken him up with a thrill of pleasure, instead of a qualm of disgust.

Upon examination at home, it was determined to be *Fissurellidwa bimaculata*; yet the shell does not quite tally with the description in West Coast Shells. Internally it is white, outside gray-green with fine sculpturing; the rays running from the aperture to the edge are strong, the circular ribs faint, and the margin is not crenulated. *F. bimaculata* is said to be $\frac{1}{4}$ in. in length; this one is more than double that size. And the dark spots on the sides are not visible. If the green stain could be removed perhaps they would appear; but as the size is too great for *bimaculata*, perhaps I have a *Fissurella* not credited to this coast.

ON COLLECTING PISIDIA.

BY DR. V. STERKI.

Pisidia, and for a good part Sphaeria, are by far not sufficiently known, systematically as well as geographically. Requested to do so, and encouraged by prominent conchologists, the writer is going to work them up. Already some valuable materials are at hand; thus the entire Pisidium-collection of Mr. E. W. Roper, numerous lots, most from Lake Michigan, sent by Mr. Bryant Walker, others from Mr. H. Prime and other conchologists, besides my own collection; and some good results have so far been attained. Yet these materials are absolutely insufficient for a thorough study and knowledge of these small mussels which, with all their minute size, are a very conspicuous and interesting part of our molluscan fauna. They should be studied in their different forms, considerably variable according to their habitats, and all kinds of waters should be searched for them all over the continent.

Whoever has collected Corbiculidae assiduously will know that they are, as a rule, present in large numbers, wherever found. The

best means for collecting them is a rather long (8-12 inches) net of strong canvas, such as used for embroidery work, fastened to a ring of strong wire¹, five to eight inches diameter, with a handle, to be used either directly, or fastened to a stick, or pole up to ten or twelve feet long. For deep waters a dredge should be used. The "stuff" gathered is shaken and washed until the remains are free of fine mud, then in a basket, sack, or some other suitable receptacle brought home, where the mollusks, Corbiculidae and others, may be picked out at leisure. If they are not to be kept alive, it is best to spread the materials on large pieces of paper, or cloth (bed sheet e. g.) and let them become dry. In this way, especially if one or several fine sieves are used, they are most easily found; and none of them should be overlooked, as some forms are very minute, and the young of all are of interest, while fully grown specimens are comparatively scarce, and so are certain species in some places. If sent for examination, all from a locality are best left mixed up, and not separated, but with notes on the nature of their habitat.

Hundreds, and thousands of specimens may be secured in a short time, not to speak of other mollusks, among which, last not least, very young Unionidae. The best places are, as a rule, among aquatic plants, and also in deep places, or holes, where the mussels are washed together. But it must also be said, that they are found most actively propagating in late fall and early winter.

New Philadelphia, Ohio, Jan., 1895.

NOTE. In Dr. Sterki's article in the January NAUTILUS, the word *nacre* should be read instead of "nave" on page 97, 9th line from foot of page, and also on page 99, 16th line from top.

Pisidium punctatum has also been found in Lake Michigan and in Herkimer Co., N. Y.

NEW AMERICAN FRESH-WATER MOLLUSKS.

BY H. A. PILSBRY.

Planorbis alabamensis n. sp.

Shell small, whitish corneous, solid, lens-shaped; intermediate in form between *P. exacutus* and *P. dilatatus*. Upper surface convex.

¹ Where fastened to the wire, the net should be enveloped with strong cloth, or leather, lest it will wear off; and the seams should be securely sewed.

but the apex is slightly sunken; whorls nearly three, slightly convex, rapidly widening, acutely keeled at the periphery, the keel projecting above the suture on the penultimate whorl in most adult specimens. On the last whorl the keel is about median in position, is acute, as if pinched out, and extends to the aperture. Base of shell convex, rising toward the umbilicus, which is moderately large and funnel-shaped, with very obtusely angled margin. Aperture small, oblique, sub-rhombic; the lip strongly thickened within. Alt. 1.8, diam. 3.4 mm.; width of aperture 1.6 mm.

Woodville, Alabama (Prof. H. E. Sargent). This is a smaller species than *P. exacutus*, with much smaller less oblique aperture, thick lip, and not so flattened. It differs from *P. dilatatus* in the acute peripheral keel, etc.

***Amnicola olivacea* n. sp.**

Shell olive-colored, somewhat intermediate in form between an ordinary *Amnicola* and *Pomatiopsis lapidaria*. Spire elevated, the apex rather acute. Whorls 5, very convex. Aperture ovate, less than half the length of the shell, angular above; peristome free except for a very short distance on the parietal wall; umbilicus rather large. Surface smooth; coated with iron oxide in the adult specimens seen.

Alt. 4.2, diam. 2.5 mm. (Male?).

Alt. 4.2, diam. 3 mm. (Female?).

Huntsville, Ala. (coll. by Prof. H. E. Sargent; see NAUTILUS for December, 1894, p. 95).

This form is quite distinct from other *Amnicola*, being of more elongated contour than any other Northern forms except *A. lustrica*. Its nearest allies are some of the smaller slender Floridian forms, but none of these have such convex whorls. As I have seen dry specimens only, I have not verified the reference of the stouter individuals to the female sex, but from analogy with other species this is probable. The supposed males have much the general appearance of *Pomatiopsis cincinnatiensis*.

***Planorbis bicarinatus aroostookensis* n. var.**

Shell having the spire and umbilicus very deep, the latter funnel-shaped as in typical *bicarinatus*, but both upper and lower keels entirely obsolete or rounded off on last whorl, which has the aspect of that of *P. trivoltis*. Surface minutely striated spirally as in *P. bicarinatus*. Aperture less angular and less produced below than in *bicarinatus*, in consequence of the rounding of the whorls. Diam.

15, alt. at aperture $7\frac{1}{2}$ mm. Specimens from East branch of Salmon brook, Woodland, Aroostook Co., Me., coll. by O. A. Nylander, Caribou, Maine.

Vivipara georgiana limnothauma n. var.

Whorls much swollen around the upper part, sloping below, giving a shouldered appearance. This is one of the most remarkable forms of *Vivipara* yet made known. Types are from an aboriginal shell-field on Hitchen's Creek, but it also occurs living in Lake George, 2 fms., off Drayton's Island (Pilsbry and Johnson coll.).

MOLLUSKS OF ALLEGHENY CO., PENNSYLVANIA.

BY GEO. H. CLAPP, PITTSBURGH, PA.

Below is given a list of additional species of land and fresh-water shells collected in Allegheny Co., Pa., to be added to the list published by Mr. S. H. Stupakoff in the NAUTILUS, April, 1894.

<i>Hyalina cellarius</i> Müll.	<i>Unio crassidens</i> Lam.
<i>Hyalina nitidus</i> Müll.	<i>Unio luteolus</i> Lam.
<i>Mesodon mitchelliana</i> Lea.	<i>Unio gracilis</i> Lam.
<i>Pupa curvidens</i> Gld.	<i>Unio rubiginosus</i> Lea.
<i>Succinea aurea</i> Lea.	<i>Unio orbiculatus</i> Hild.
<i>Succinea obliqua</i> Say.	<i>Unio securis</i> Lea.
<i>Limnæa parva</i> Lea.	<i>Unio cornutus</i> Bar.
<i>Gyraulus dilatatus</i> Gld.	<i>Unio undulatus</i> Bar. (?) dead
<i>Pleurocera canaliculatum</i> Say.	[broken shell.
<i>Goniobasis</i> ? (Young).	<i>Unio obliquus</i> Lam.
<i>Unio ovatus</i> Say.	<i>Ancylus tardus</i> Say.
<i>Unio rectus</i> Lam.	<i>Ancylus rivularis</i> Say.
<i>Unio pilaris</i> Lea.	

From the previous list, *Mesomphix lævigatus* Pfr. should be dropped. I have found *Mesodon sayii* Binn. in Beaver Co., but have not, so far, found it in this county.

NOTE ON UNIO OREGONSENSES LEA.

For years I have been puzzled over a shell in the Lea collection of Naiads which Lea received from Wheatley as coming from the

Columbia river, Oregon and which the former named *U. oregonensis*, describing and figuring it in Trans. Am. Phil. Soc. X, p. 275, pl. 22, fig. 33. The specimen is in bad condition, being somewhat broken and considerably eroded. In a paper on the Relationships and Distribution of the North American *Unionidae*, with notes on the West Coast Species, which I published in American Naturalist, Vol. XXVII, No. 316, I stated that I had come to the conclusion that the specimen in question was a form of the widespread and variable *Unio luteolus* Lam, there being examples in the National Museum from Canada very much like it. I believed that if it really came from the Columbia river it was just possible the young might have been carried in mud on the feet of aquatic birds, from waters near by which drain into the Missouri, in which stream *U. luteolus* is found. But I have never been quite satisfied with my determination of the shell, since it always seemed to resemble to some extent a group of the Mexican species. To-day, in carefully going over all the Mexican and Central American Naiad material in our own and the Lea collections I suddenly discovered a surprising resemblance between the Lea specimen and some others of *U. rowelli* Lea, and on careful comparison I found it to be undoubtedly an old, solid, and inflated female of that species.

Unio rowelli is a remarkably variable form which I cannot for a moment doubt is exactly synonymous with *U. macneilii* Lea, the types of both species being in the Lea collection. Lea calls attention in his description to its resemblance to *U. sapotulensis*, to which it is closely related, and it may be remarked in passing that in this group the females and males are separate, the former being inflated in the posterior ventral region like those in the *Luteolus* Group. Some specimens of this protean species are much inflated, others are compressed; some are somewhat triangular and pointed at the base of the posterior slope, without a trace of biangulation, others are nearly rhomboid and distinctly biangulate; there is considerable variation in the degree of sulcation, and in the coloring of the epidermis. They may be either uniform greenish-yellow, brownish, or marked with distinct and delicate radiating stripes as in the type of *U. oregonensis*. And all these variations may occur in a lot from a single locality.

The cardinals are rather compressed, double in the left and single in the right valve, and have a peculiarly rough, torn appearance; while the laterals are somewhat striated longitudinally.

As *Unio oregonensis* was described probably about the year 1852, *rowelli* in 1859, and *Macneilii* in 1874, the former should have precedence. But it may be set down as an absolute certainty that no member of the group to which this species belongs was ever found nearer than 1500 miles from the Columbia river, and the locality is undoubtedly an error. As the name *oregonensis* is, therefore, misleading, I think we are justified in applying to the species the next oldest name, *Unio rowelli* of Lea. As I have shown in the article referred to in American Naturalist that *Unio famelicus* Gld. of the Columbia region is only a young *Unio multistriatus* Lea, of Brazil, I think I am safe in saying that no Unios are known to inhabit North America west of the great Rocky Mountain chain; this being the largest area destitute of *Unio* life in the temperate or tropical regions of the globe.

C. T. J. m f

NOTES AND NEWS.

MR. A. A. HINKLEY has removed from Du Bois, Ill., to Rockford, Illinois, which will be his address in future.

MR. EDW. W. ROPER and Mrs. Roper sailed for Jamaica on Dec. 19, to spend the winter collecting shells and ferns.

A TRAIN STOPPED BY SNAILS.—Mr. Laille, an engineer in the employ of the Tunisian Railway, writes in the *Dipeche Tunisienne*: "The train coming east from Suk-el-Arba last Thursday was two hours late for a very singular reason. The road was literally covered with snails, the wheels of the locomotive crushing these mollusks into a pulp, which destroyed all adherence and caused the locomotive wheels to skate, so to speak, in their places. We have seen flocks of locusts stop trains, but I think the fact that snails can stop a train is without a precedent. These snails are very general all through Tunis, especially during the rainy season; the smallest remainders of green on field or tree are covered with them, so much so that they appear like a bunch of grapes hung up, only that their white shells produce a curious effect."—*Phila. Record*.

MR. JOHN B. HENDERSON of Washington, D. C., has sailed for Japan, with Mr. John W. Foster, to be absent about three months.

HELICIONISCUS NIGRISQUAMATUS.—By error, the word "not" was printed for *now*, in line 11 from bottom of Mr. Taylor's article on this species, October number, p. 66. As it completely changes the meaning of the sentence, this correction should be made.

FULGUR PERVERSUM is a rare shell on the coast north of Delaware Bay, if, indeed, it occurs at all living. Mr. Curtis Smith has recently found dead and blackened (fossil?) specimens at Wildwood, N. J.

PROF. H. E. SARGENT of Woodville, Ala., called upon his friends in Philadelphia on the 26-28th inst. He purposes to be in New England for the next month or more.

NEW PUBLICATIONS.

THE LIFE AND WRITINGS OF RAFINESQUE, By Richard Ellsworth Call.¹ (Filson Club Publications, No. 10).—To most naturalists, a peculiar charm attaches to the personalities of their predecessors in the same field of endeavor. And we of to-day, who may fairly be reckoned as the third generation of nature students in America, have a natural curiosity to know something of the men of that first generation, to whom the "New World" was indeed new—who enjoyed in such generous measure that intense delight which can only be felt or appreciated by the field naturalist in the presence of forms of life new to him. Rafinesque, the subject of Mr. Call's present work, has been much less familiarly known to us than any of the other pioneers in American zoology; he was misunderstood by most when living, and scoffed at dead. It is, therefore, with unusual interest that we follow the tale of his eventful life as it is here related. Mr. Call, after telling of his early training, or rather lack of training, follows his hero to France and then to Sicily, where Rafinesque's life work was begun, and his peculiar characteristics as a naturalist were developed. When he finally left that sunny island for America, he was already the author of many works and papers on numerous branches of zoology and botany, though only thirty-two years of age. His career of misfortune in America—relieved only by the intense pleasure of his work—is graphically described, the period covered by his life in Kentucky being given most space, this time covering Rafinesque's most important contributions to American science. Two portraits of Rafinesque are reproduced, as well as an autograph letter and sample pages of some of his works, all by good photo process engravings. The volume concludes with a bibliography, which seems to be complete.

The character of Rafinesque is appreciatively interpreted by Mr. Call, and his shortcomings are as leniently mentioned as strict re-

¹ Louisville, Kentucky, 1895, 4to. pp. xii, 227.

gard for right will admit. Acknowledging frankly the great defects of the eccentric naturalist's work, its value and genius are still considered by Call to be very considerable. There can be no doubt that in the appreciation of *natural groups*, Rafinesque had great insight, as his biographer claims; but still we can hardly endorse the statement: "considered as a whole, the conchologic work of Rafinesque was remarkably well done." From some acquaintance with that work, we would rather call it remarkably *badly* done, and only saved from worthlessness by certain glimmers of genius, in the ability to grasp natural groups. Some facts of value could have been obtained had Mr. Call corresponded more freely with Philadelphians, as here Rafinesque spent many years. Among other things, the statement in regard to the Poulson collection of Rafinesque's *Unionidae* on p. 109, would not have been made. This collection was collected and labelled by Rafinesque, was procured by Tryon from Poulson's estate and is now preserved in the collection of the Academy of Natural Sciences of Philadelphia.

As a whole the volume seems remarkably free from mistakes of any kind, considering the difficulty of the subject. The typography is superb. The proof-reading is almost perfect, though we note a very few slips, such as "profligate" for prodigal, on p. 75. It is printed on fine paper, with wide margins, and is altogether a beautiful piece of book-making. We trust it will find a place on the shelves of conchologists and naturalists generally, and lead to a more just appreciation of this great though erratic genius.

THE MECHANICAL CAUSE OF FOLDS IN THE APERTURE OF THE SHELL OF GASTROPODA, By Wm. H. Dall (Amer. Nat., Nov., 1894).—The plicæ and folds found in the aperture and throat of gastropod shells are explained by the wrinkling of the mantle when retracted into the gradually narrowing caliber of the shell, and pressed between the solid foot and the shell wall. The semi-fluid secretion of which the shell-lining is built up is exuded from the whole surface of the mantle, but becomes rubbed off where the summits of mantle-folds press against the shell, gradually accumulating in the interstices between these folds. It is found that in shells having the ridges extending far inward, the adductor muscle is attached far within; in those having no folds, or only at the margin of the aperture, the adductor is attached to columella lower down. The deeper this attachment, the greater the distance over which the mantle is drawn, and consequently the greater its folding by compression, and the more emphatic the shell-ridges deposited by it.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

EDITOR :

H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

ASSOCIATE EDITOR :

C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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No. 11.

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MAR 11 1895

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VOL. VIII.

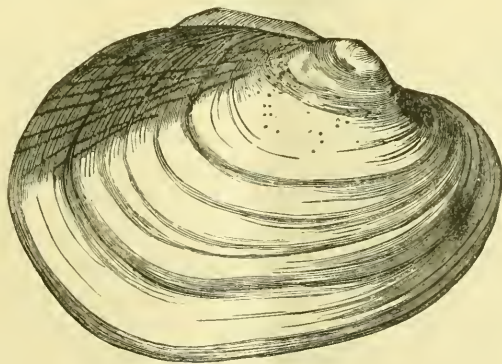
MARCH, 1895.

No. 11

UNIO OCHRACEUS AND CARIOSUS.

BY CHARLES TORREY SIMPSON.

The senior editor of the NAUTILUS has asked me to point out in a clear concise way the specific differences between *Unio ochraceus* Say, and *Unio cariosus* Say. They were both described in Nicholson's Encyclopedia, in an article on conchology, by Say; and the work, which is now long out of print, is exceedingly rare, and out of the reach of the ordinary student.

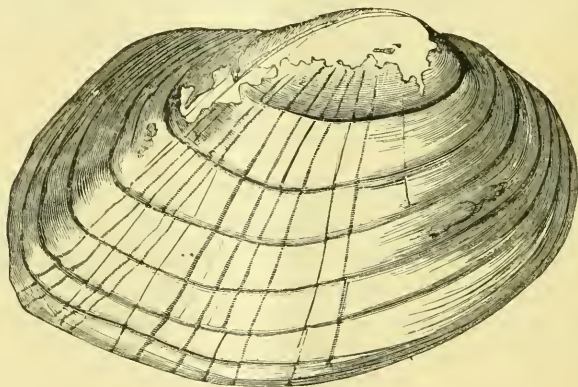


Unio ochraceus Say.

Both belong to a great assembly of North American forms fairly typified by the well known *Unio occidentalis*, it being one of the few groups that are well represented both in the Mississippi Valley and

Atlantic drainage areas, which in the main are peopled by very different *Unio* faunas.

The species which are the subject of this note, though closely related and having about the same geographical distribution, are no doubt distinct, and when one has learned to separate them he rarely has any difficulty in distinguishing them at sight. As a rule, *Unio ochraceus* is the more inflated and thinner shell of the two; it is almost invariably dull-colored, and the epidermis, especially at the posterior end is generally raised into slight irregular folds, which follow the growth lines. The rays, which are dirty green and ill-defined, usually cover the posterior part of the shell, and sometimes extend over the whole disc, becoming fainter towards the anterior



Unio cariosus Say.

end. The interior is dull-colored, often lurid, and quite frequently tinted with reddish salmon or purple.

On the other hand, *Unio cariosus* is generally the more compressed of the two; often showing a fairly well-defined angle on the posterior slope; it is almost invariably smooth and shining; the epidermis being yellowish or a dirty straw color, sometimes tinted with brown. Usually above the posterior slope there are a few wavy, very distinct, dark green rays, and sometimes, though rarely, this radiation extends over the shell. The interior is usually white or silvery, and more or less iridescent posteriorly.

In a very large series any of these characters may fail. Specimens of *U. cariosus* may be inflated, or very rarely slightly roughened; there may be individuals of either species that are uniform in color, or rayed throughout, but in an extensive set they will, for

the most part, hold good ; and the roughened, dull exterior, feeble rays, and lurid interior of *U. ochraceus*, and the shining epidermis and well defined posterior rays of *U. cariosus* are very constant. *Unio cariosus*, on the whole, approaches much closer to forms of *U. occidentis* than it does to *U. ochraceus*.

The latter ranges from the Connecticut River and the state of New York, south in the waters of the Atlantic drainage to Savannah, Ga. Two specimens from the latter locality have remarkably red interiors, and are a little peculiar, but are undoubtedly the species in question. *Unio cariosus* is found in the vicinity of Quebec, Canada, according to Latchford, and it has been reported from western New York. A doubtful specimen is in the Lea collection from Talledega, Ala. It is in the same collection from Edgefield, S. C., Ogeechee River, Ga., and Columbus, Ga., and these are no doubt correctly named. Other shells in the Lea collection from Nashtot, Wis., and Ontonagon, Mich., are very probably forms of *Unio occidentis*.

NOTES ON THE REPORTED EXTINCTION OF THE GENUS ACHATINELLA
AND MARVELOUS DEVELOPMENT OF A FLORIDA FASCIOLARIA.

BY JOHN FORD.

A most extraordinary account of a collection of shells, located somewhere in the interior of New York State, was handed me by a friend a few days ago.

This purports to have been written by a correspondent of a Rochester newspaper, in the columns of which the article probably first saw the light. The writer, it appears, does not claim any scientific knowledge of shells, nor can it positively be said that his bump of imagination is abnormally developed. Nevertheless, he has given to the paper alluded to, and consequently to the world, some very remarkable bits of information. Information, indeed, which, if true, shows how puny are the geographical and scientific acquirements of the general run of conchological students. Of course, for lack of space in your columns, reference can only be made to one or two of the marvelous statements embraced in the article. One of these refers to the genus *Achatinella*, of which the writer says, "This shell is confined to the Sandwich Islands and its tenant feeds on the

herbage of these islands. Since the islands have been pastured, the 'variety' has almost entirely disappeared, and probably not more than a half dozen specimens could be found there to-day." What a dire calamity! and how remarkable that these pretty little creatures should have "shuffled off their mortal coils" in the very season that less regal robes slipped from the shoulders of their Island Queen.

A few flippant students may question this tale of *starvation* in the midst of *green pastures*, but it will perhaps be well for them to pickle their opinions, since the positive assertions of "correspondents" are not to be trifled with. The shell expert who can doubt this starvation story would quite as likely question the following narrative said to have been written by the "experienced collector" who forwarded the shell referred to, to the aforesaid unparalleled New York aggregation, viz.; "The large Florida *Fasciolaria* father found one day by accident.

"While drifting about in Florida waters his boat suddenly touched what seemed to be a rock but it proved to be an immense specimen of the *Fasciolaria* (sic), alive and travelling." "This specimen weighs several hundred pounds."

A brief statement to be sure, but a graphic one, as the reader will admit. There is not a word, however, as to whether the boat was wrecked in its "sudden" contact with the limy mass "weighing several hundred pounds."

Nor is there any reference to the final disposition of that part of "the *Fasciolaria*" which, when struck, was "alive and travelling." But this fact matters little, perhaps, since we are assured that the "several hundred pounds" were gotten safely to the shore, and finally into that collection of shells which (I quote again) "is expected to be in a short time the most complete and valuable one, from a scientific standpoint, in the world."

Presumably this monster of "Florida Waters" is known to Science as *Fasciolaria gigantea*, but alas! how pitiable has been the ignorance of the scores of so-called conchological experts who have hitherto believed that this, the largest species of the genus, did not exceed a paltry ten pounds in weight. Think of it, ye academic plodders who for years have been gazing with wonder upon a petty *eight* pounder, imagining the while that Florida had utterly failed to produce anything larger in the same line. O, the pity of it! You that have given years of study and thought to the molluscan world,

how could you so mistake a pigmy for a giant, a veritable baby for a grandfather? Far better would it have been had you made a Mecca of the Empire State and sat at the feet of its astute correspondent, whose present throne is, doubtless, ye same old Fasciolaria, "alive and travelling" and "weighing several hundred pounds."

NOTE ON *HELIX SAULIÆ* PFR (non REEVE)=*PALUMBA SOUVERBIE*.

BY HUGH FULTON, LONDON.

Owing to an error in Reeve's Monograph some confusion has been caused as to the identity of the above species; both Pilsbry and Hidalgo have taken Reeve's description and figure (Conch. Icon., fig. 393) as being that of the type of *sauliæ*, consequently, and with reason, they have considered the *palumba* of *Souverbie* to be distinct from the former species. The fact is, that when Reeve described and figured his *sauliæ*, he had not the type of that species before him; the type specimen of Pfeiffer's *sauliæ* in the Cumingian collection, is identical with the *palumba* of *Souverbie*, Journ. de Conchyl., 1858, p. 369; 1862, t. 10, f. 5.

I have not been able to find in the Cumingian collection the shell figured by *Reeve*.

SHELLS OF AROOSTOOK CO., MAINE.

COLLECTED BY OLOF O. NYLANDER.

The species listed below were collected in the vicinity of Caribou, Maine. Aroostook County is the northern county in Maine, and very few species have hitherto been reported from there. The specimens of *Limnæa* and *Planorbis* show great variation, the forms of *L. emarginata* are especially interesting.

Vitrina limpida Gld. Caribou.

Vitræa arborea Say.

Conulus fulvus Mull.

Pyramidula alternata Say. Woodland.

Pyramidula striatella Anth.

Pyramidula lineata Say.

Polygyra albolabris Say. Woodland.

Polygyra dentifera Binn. Woodland.

- Polygyra sayi* Binn. Woodland.
Polygyra monodon Say. Woodland.
Strobilops labyrinthica Say.
Pupa pentodon Say. Woodland.
Vertigo gouldi Binn. Woodland.
Ferussacia lubrica Mull.
Succinea obliqua Say. Woodland.
Succinea ovalis Gld. Aroostook Co., Me.
Carychium exiguum Say. Generally diffused.
Limnæa humilis Say.
Limnæa desidiosa Say.
Limnæa emarginata Say.
Limnæa emarginata mighelsi W. G. B.
Planorbis trivolvus Say.
Planorbis bicarinatus Say.
Planorbis bicarinatus aroostookensis Pils.
Planorbis campanulatus Say.
Planorbis deflectus Say. Streams generally. Very large specimens in inlet of Cross Lake.
Physa ancillaria Say. Square Lake.
Physa heterostropha Say. Generally abundant.
Campeloma decisum Say. Lakes and Streams.
Pomatiopsis cincinnatiensis Lea. Caribou Lake.
Unio complanatus Sol. Lakes generally. Some are very large.
Margaritana margaritifera L. Aroostook R. (rocky bottom).
Margaritana undulata Say. Square Lake.
Anodonta fragilis Lam. Caribou L. (mud bottom).
Sphærium sulcatum Lam. Salmon Brook Lake.
Sphærium striatum Lam. Square Lake.
Pisidium variabile Prime. Caribou Lake.
Pisidium abditum Hald. Caribou Lake.

NEW SPECIES OF LAND-SHELLS FROM THE GALAPAGOS ISLANDS.

BY WILLIAM H. DALL.

Bulimulus (*Næsiotus*) *Reibischii* n. s.

Shell elevated, slender, of a pale ferruginous tint, rather solid, with nine whorls; apex funiculate as in other *Nesiotes*, the first two (nepionic) whorls finely ribbed and polished, the remainder with numerous oblique or irregular transverse ribs crossed by nu-

merous sharp spiral threads, with wider interspaces; suture distinct, somewhat appressed; base of last whorl somewhat attenuated; whorls little inflated, but not flattened; umbilicus a mere chink; aperture oval, higher than wide, rounded in front, the pillar simple, the margins thickened but not reflected. Lon. 11·0; max. diam. 2·5 mm.

This shell has the sculpture of *B. rugiferus* Sby., and somewhat the form of *B. chemnitzzioides* Fbs., though shorter and with fewer whorls. It is fairly intermediate between *Næsiotus* and *Pleuropyr-gus*. Two specimens were collected by the U. S. S. Albatross at Indefatigable Island. The species is named in honor of Herr Paul Reibisch who has recently worked up the Wolf collection from these islands.

Bulimulus (*Næsiotus*) *Fanneri* n. s.

Shell short, stout, pointed, with six whorls of which two are nepi-
onic with the usual sculpture, while the others are marked only by
lines of growth and microscopic, inconstant spiral striation, of
which the most prominent lines are regularly spaced and micro-
scopically beaded, when present; color pinkish or slightly brownish
white, no peripheral pale band visible on the specimens which, how-
ever, are not perfectly fresh; whorls well rounded, umbilicus large
and deeply pervious; aperture large, with a widely reflected lip,
the outer lip much bent over on the body, closely approaching the
pillar and united to it by a distinct callus. Lon. 11·0; max. diam.
7·0 mm.

This belongs to the *B. jacobi* group, and is about the size of small
varieties of *jacobi*, but is more conical and stouter, and has an aper-
ture very differently shaped and with a more broadly reflected lip
than any other species from these islands. It was found with the
preceding and is named in honor of Capt. L. L. Fanner, com-
mander of the Albatross. The pillar is perfectly plain and with no
sulcus or fold at the base.

NOTE ON TASMANIAN *ACMÆA* AND *ISCHNOCHITON*.

BY H. A. PILSBRY.

***Acmæa cantharus* Reeve.**

The habitat of this species was said, by Reeve, to be New Zealand;
but Prof. Hutton, some years ago, corrected this error, stating that

it is Tasmanian. Numerous specimens received from Mr. H. Suter, collected by Mr. W. L. May, at Frederick Henry Bay, Tasmania, show a considerable range in pattern of coloring. The interior is very much like that of *Lottia gigantea*, and the anterior, marginal position of the apex also forcibly recalls that West American species.

Acmæa parva Angas, var. *tasmanica* n. v.

Shell smaller, wider and higher than "*Nacella*" *parva* Ang. (P. Z. S., 1878, pl. 54, f. 12), opaque white, with radial irregular rays of bluish or subtranslucent white at the sides and short, transverse bars of the same on the back. Length 8, breadth 2.2, alt. 1.5 mm. Estuary of Derwent R., Tasmania, 10 fms. Collected by Mr. W. L. May.

Ischnochiton (*Haploplax*) *Mayi* n. sp.

Shell short-oval, moderately elevated, carinated, the side-slopes slightly convex. Surface smooth to the naked eye, but finely granular. *Color of valves and girdle uniform black* above, or slightly brownish at the beaks when eroded.

The intermediate valves have almost straight sutures, even a trifle concave in old specimens, the beaks projecting a trifle in young ones. *Lateral areas distinctly raised (the diagonal distinct* and rather wide), sculptured with several arcuate, indistinct growth-marks, sometimes showing very slight traces of coarse, low pustules, but these are hardly mentionable; all over minutely granulose in diamond pattern. Central areas with faint growth-striae anteriorly, distinctly granulose at the sides, the granules arranged to form forward-converging riblets, which, though slight, are apparent on the outer half of each valve; central portion of central areas smoothish, with faint granulation only, beaks smooth. End valves sculptured like lateral areas. Valve viii with mucro projecting, at about the anterior third; the posterior slope concave below the mucro and then straight.

Interior dull blue-green, greener behind the rather heavy valve-callus, the depth of the cavity rather lead-color. Sutural laminae small, projecting less than half the length of a valve; sinus wide. Slits in valve i, 11; valves ii to vii, 1-1; valve viii, 12-13. Teeth sharp, smooth and short.

Girdle black, clothed with densely imbricating, coarse, convex, smooth scales.

Length 8, breadth 6 mm.; larger, "curled" examples would measure at least 10 mm. long. Divergence the same as in *I. smaragdinus*.

Eagle Hawk Neck, east coast of Tasmania. Collected by Mr. W. L. May, and communicated to me by Henry Suter.

This species belongs to the group of smoothish Australian species, such as *lentiginosus* Sowb., *smaragdinus* Angas and *virgatus* Reeve. It has more distinctly differentiated lateral areas and better developed pleural sculpture than any of them, and is, moreover, of a uniform black color. Types in coll. Acad. Nat. Sci., Phila.

In this connection it may not be out of place to direct attention to certain errors in the volume on Chitons in the Manual of Conchology. By the study of many specimens received from Messrs BEDNALL and COX, I find that two species were "lumped" under the name *Ischnochiton contractus*. (1) *I. decussatus* Reeve, of which *castus* Reeve and *speciosus* Ad. and Ang. are synonyms, and (2) *contractus* Reeve, of which Mr. Sykes considers *pallidus* Reeve a synonym. On account of the inadequate illustration and description of Reeve's *C. crispus*, I did not recognize it in my *Isch. haddoni*; but upon sending specimens of the latter to Mr. E. R. Sykes for comparison with Reeve's type, he informs me that they are the same. While something might be said in favor of ignoring Reeve's name on the score of insufficient definition, it may, in the long run, be better to receive it and make my own *I. haddoni* a synonym of *I. crispus*. I regret the change, because my intention was to honor Prof. HADDON, whose work on Chitons, as well as in other departments of Zoology, is of great merit; and a synonym is rather a doubtful honor.

NEW SPECIES OF LAND SHELLS FROM PUGET SOUND.

BY WM. H. DALL.

In some minute shells sent for examination by Mr. P. B. Randolph, of Seattle, after eliminating species already known, two forms appeared to be inedited. Having sent them to Mr. Pilsbry for criticism, he agrees that they are new, and the following descriptions are submitted.

Patulastra? (*Punctum?*) *pugetensis* n. s.

Shell minute, pale greenish yellow, nearly smooth, the first whorl and a half smooth, the others with fine, silky, close-set, hardly elevated lines or minute regular riblets, somewhat flexuous and in harmony with the incremental lines; form moderately elevated, the whorls inflated with a deep suture, and, in the adult, rapidly enlarging near the aperture in the latter part of the last whorl; aperture large, quite oblique, almost circular, the segment of the body between the two lips about one-sixth of the whole; umbilicus ample, scalar, exhibiting part of all the whorls which make, in adults, from three to three and a quarter volutions.

Alt. 0.5; max. diam. 1.5, min. diam. 1.2 mm. Habitat, Seattle, Wash., under leaves.

Pyramidula? *Randolphii* n. s.

Shell minute, reddish brown, with dull silky lustre, elevated, with three and a half rather inflated whorls; sculpture only of fine incremental lines, barely perceptible under an ordinary triplet lens; suture deep, periphery rounded, slightly less so in the immature shell but seemingly never angular; aperture obovate, somewhat oblique, wider than high, the body segment about one third of the whole; top dome-like, base full, umbilicus small, subcylindric, deep.

Alt. 0.75, max. diam. 1.4, min. diam. 1.25 mm. Habitat, with the last.

This little shell recalls *Conulus fulvus* in form, but wants the polish and imperforate base, and is more elevated and inflated than *C. fulvus* of the same number of whorls. It is not unlike the little *Helix granum* Strebel on a smaller scale. It is named in honor of the gentleman who collected it, who is deeply interested in the mollusk fauna of the Sound region.

NOTES AND NEWS.

PORTRAIT OF RAFINESQUE.—We are informed that portraits, suitable for framing (12 x 14 inches), may be had for a nominal sum to cover postage and packing, by addressing *Prof. R. Ellsworth Call, Manual Training High School, Louisville, Ky.*

By error, the name of the author was omitted from the paper "Note on *Unio oregonensis* Lea," in the last number of the NAUTILUS. It should have been signed *Charles T. Simpson.*

NAVARCHUS.—In working upon the Tectibranchs for Vol. XVI of the *Manual of Conchology*, I find that the name *Navarchus*, applied to a group of *Doridiidae*, is preoccupied. I propose, therefore, to substitute *Navanax*, the type being *N. inermis* Cooper.

PLEUROTOMARIA BEYRICHI.—A specimen of this rare species has lately been added to the National Museum Collection, which now possesses three of the four recent forms of the genus.

NOTE ON POTAMANAX.—The name given to this group of tropical American Melanians has been used again for a genus of *Lepidoptera* (Watson, *Hesperidae*, P. Z. S., 1893, p. 55). As the signature of the Proc. Acad. Nat. Sci. Phila. containing the description of the mollusk genus was actually distributed on Jan. 24, 1893, and the paper containing the Lepidopterous genus was printed under the proceedings for Jan. 17, 1893, the latter has apparent priority. However, the proceedings of that meeting could hardly have been actually printed until some weeks after the meeting, so that it is extremely probable that the name of the Lepidopter is later in date of actual publication, and must, therefore, be changed.

We are indebted to Dr. W. D. Hartman of West Chester, Pa. for the illustrations of *Unio ochraceus* and *U. cariousus* in this number. They are from his *Conchologia Cestrica*, an excellent work describing and figuring the shells of Chester Co., Pa., and incidentally the majority of those of the Middle States.

ANATOMY OF HEMICYCLA.—Dr. A. Krause (Nachbl. D. M. Ges. Jan.-Feb. 1895, pl. 1) has recently dissected several species of this Canary Island group of *Helices*, and finds their anatomy to be practically identical with that of *Tachea*. The rank and position assigned the group in Pilsbry's "Guide to the Study of *Helices*" is therefore fully confirmed. Its relationships are not with the Madeira and Azores *Helices* of the genus *Leptaxis*, but with the forms of true *Helix* of the European and N. African mainland.

NEW PUBLICATIONS.

THE ZOOLOGICAL RECORD for 1893 has appeared, containing the records of Mollusca, Brachiopoda and Bryozoa, by Mr. B. B. Woodward. These digests of the literature of zoology are of such great utility, when well done, that we cannot refrain from congratulating the Zoological Society upon the admirable manner in which the present Recorder has performed his difficult task. Mr. Woodward should have the hearty coöperation of all the conchologists. His

labor would be materially lessened if authors would send him "separates" of their publications, as soon as issued, addressed to *The Editor of the Zoological Record, Zoological Society, 3 Hanover Square, London W., England.*

DESCRIPTION D'UN PERIDERIS NOUVEAU [*P. lechatelieri*] provenant du Dahomey, par Ph. Dautzenberg (Journ. de Conch., 1893, pl. I).

DESC. D'UNE NOUVELLE espèce du genre *Littorina* provenant des côtes de la Tunisie, par Ph. Dautzenberg (J. C., '93, pl. I). *L. nervillei*.

DESC. D'UNE ESPECE NOUV. du genre *Chama* prov. des côtes océaniques de France, par Ph. Dautzenberg (Bull. Soc. Sc. Nat. de l'ouest de la France, 1892, p. 133, figs.). *Chama nicolloni*.

CONTRIB. A LA FAUNE MALACOLOGIQUE DES ILES SECHELLES, par Ph. Dautzenberg (Bull. Soc. Zool. France, 1893, p. 78). Contains important additions to the records in Martens' work in Möbius' Reise nach Mauritius, etc. No new species.

CRUISE OF THE STEAM YACHT "WILD DUCK" IN THE BAHAMAS, etc., NOTES ON THE SHELLS COLLECTED, by Wm. H. Dall. (Bull. Mus. Comp. Zool. xxv, No. 9.) It appears that the lagoons of the Bahama Is. are peopled by a peculiar mollusk fauna, evidently derived from species living normally in the sea outside. The number of lagoon species is small, and they are all marked by (1) thinness of shell; (2) diminutive size; and (3) when colored at all, by brilliancy of color, as compared with their nearest relatives in the adjacent sea. Among others enumerated by Dall which are common to the sea and the lagoons, are the following which occur only in and are characteristic of the latter: *Cyrena colorata* Prime, *Venus (Anomalocardia) leplalea* Dall, *Tornatina parviplica* Dall, *Cerithium (Pyrazus) 7-striatum* var *degeneratum* Dall, *Cerithium tenuis* Pfr.

A considerable list of land species is given, among them *Chondropoma watlingense* and *Cerion Agassizi* are new, the latter fossil. Dall calls attention to the fact that the name *Strophia* is preoccupied, and proposes to substitute *Cerion* Bolten, 1799, as Mörch had already done in 1850. He gives names to the subdivisions of the genus indicated by Maynard, as follows:

CERION s. s. Parietal lamina short, situated in the angle between pillar and body-whorl; short internal sets of laminae persistent; type, *uva*.

STROPHIOPS Dall. Parietal lamina penetrating body-whorl to $\frac{1}{3}$, $\frac{1}{2}$ or more its length, central, etc. Type *decumana* [not Fér. != *regia* Bens. !-Ed.]

MAYNARDIA Dall. Like Strophops, but parietal tooth short; type *neglecta* Mayn.

DIACERION Dall. Parietal lamina double within, and penetrating one or two whorls; type *dalli* Mayn.

EOSTROPHIA Dall, 1890. No teeth or laminae. Type *E. anodonta* Dall, fossil in lower Miocene, Tampa Siliceous beds.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

EDITOR :

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Vol. VIII.

APRIL, 1895.

No. 12.

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APR 5 1895

THE NAUTILUS.

VOL. VIII.

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No. 12

MOLLUSK FAUNA OF PHILADELPHIA AND ENVIRONS.

BY MORRIS SCHICK.

In the Proceedings of the Academy of Natural Sciences of Philadelphia for 1861, page 306, Mr. W. M. Gabb has given a list of Philadelphia mollusks, enumerating 62 species, seven of which are, however, synonyms or doubtful inhabitants of this region. Having collected a number of species in this vicinity which are not on Gabb's list, the writer thought it well to make a new one, giving exact localities where the various species have been found during the last two or three years in the neighborhood of Philadelphia, and including not only those forms personally collected, but also the species and localities discovered by other local naturalists—Messrs. Walton, Vanatta, Stone, Pilsbry, McGinty, Johnson, Ford, Fox and Eisenhardt, all of whom have contributed materially to the list.

The importance of the Philadelphia fauna, as being the type locality of many of Thomas Say's species, will always render it of interest to those who study geographic variation; and moreover, an accurate local list is of value to conchologists in the future, in determining the ever fluctuating geographic limits of species and varieties. While many of the special localities herein recorded will be destroyed by the growth of the city, others situated in Fairmount Park, especially along the Wissahickon, will doubtless perpetuate within the city limits most of the species indefinitely; and the aquatic forms will survive at least as long as the Schuylkill furnishes the water supply of the city.

The west bank of the Schuylkill above Girard Avenue was a very good collecting ground, where one could find in good numbers *Polygyra hirsuta*, *P. thyroides*, *P. tridentata juxtidentis*, *Pyramidula alternata*, *Gastrodonta ligera*, *G. suppressa*, *G. nitida*, *Vitræa arborea*, and *Selenites concava*, with a few others not so common; but this place has been destroyed this year by the laying out of a drive. On the land shells of the park, see Ford, *Conchologists' Exchange*, II, p. 7.

In his list Mr. Gabb refers to *Helix labyrinthica* as common near Germantown; I have been able to find but three specimens of this species, after a dilligent search of three seasons. He also mentions *H. hirsuta* as one of our commonest species, but this is now also uncommon; while others are becoming rare, there are some species now quite common that are not mentioned in Mr. Gabb's list, such as *Limax maximus*, *Pyramidula striatella*, *Vallonia costata*, *Pupa contracta*, *Succinea obliqua*, *Sphærium striatinum*, *S. transversum*, etc. *Helix egena* Say, a depressed form of *Conulus fulvus*, was described from ten miles above Philadelphia; and *C. chersina*=*fulvus* is reported in Gabb's list as found near Germantown by Tryon. It has not occurred to recent collectors.

Helix appressa, admitted by Gabb, on the evidence of one specimen found on E. K. Tryon's estate near Germantown, was evidently a lost cabinet specimen. *Amnicola lustrica* Say of Gabb's list is the half grown *Pomatiopsis lapidaria*. "*Margaritana rugosa* Say," is an evident pen error for *M. marginata* Say, which Gabb omits. *Unio fisherianus* reported from the Schuylkill above Girard Avenue bridge, one specimen, may have been an incorrect identification.

TESTACELLIDÆ.

[*Testacella maugei* Fér. Green house on School Lane, Germantown.]

SELENITIDÆ.

Selenites concava Say. Both banks of Schuylkill at Falls, and below; everywhere rare.

LIMACIDÆ.

[*Limax maximus* L. West Philadelphia and Darby, plentiful in cellars and green houses (Pilsbry); Wissahickon, uncommon; Laurel Hill Cemetery, common; Germantown (Vanatta)].

NOTE.—Introduced species are enclosed in brackets The authority cited for each special locality refers to that immediately preceding only, but many of the places have been visited by several collectors.

[*Limax agrestis* Müll. Abundant in and around the city, and varying much in coloration.]

Limax campestris Binn. Common in most suitable localities around the city.

ZONITIDÆ.

Gastrodonta suppressa Say. Belmont glen, common (H. E. Eisenhardt); Tulpohocken Valley, Germantown, uncommon; Perkiomen; Glenside (Johnson); Fisher's Station, Germantown (Stone).

"I found a few specimens of this shell on the farm of my friend Mr. Reuben Haines at Germantown." (Say.).

Gastrodonta ligera Say. Wissahickon, common; also near Strawberry Mansion and West Falls of Schuylkill.

Gastrodonta ligera Stonei Pils. Westville, N. J., common; Hollyoak, Delaware (Stone, TYPE locality).

Gastrodonta (Zonitoides) nitida Müll. Wissahickon; West Park; and Westville, N. J., common. In Nov., 1893, they were found near Strawberry Mansion, East Park, congregated in immense numbers under logs (Vanatta).

Gastrodonta (Pseudohyalina) minuscula Binn. Wissahickon, rare; West Falls of Schuylkill (Vanatta); Westville, N. J. (Fox).

[*Vitreæ (Polita) cellaria* Müll. Wissahickon, uncommon; Conshohocken (R. Walton); found also in cellars of dwellings.] This is the *Helix glaphyra* Say, described in Nicholson's Encycl., Amer. Ed., 1818. "Taken by Mr. G. Ord in his garden in Philadelphia." (Say.)

Vitreæ arborea Say. Same locality as *G. nitida*; Fisher's Station, Germantown, common (Stone); Westville, N. J. (Fox).

Vitreæ indentata Say. Wissahickon, uncommon; Westville, N. J., common; Fisher's Station, Germantown (Stone).

Vitreæ radiatula Alder (*viridula* Mke.; *electrina* Gld.). Lansdowne Valley, a few specimens; Wissahickon, rare; near Falls of Schuylkill (E. G. Vanatta); Westville, N. J. (Fox).

ENDODONTIDÆ.

Punctum pygmæum minutissimum Lea. Gloucester Co., N. J. (Wm. J. Fox, NAUTILUS, IV, 113).

Pyramidula alternata Say. Wissahickon and Germantown, common; near Falls of Schuylkill (Vanatta); West Park (Ford); Perkiomen (Johnson); a pallid, spotless variety is found along the Wissahickon.

Pyramidula striatella Anth. West Park, common; Wissahickon, common; Westville, N. J., one specimen; near Strawberry Mansion, where, in Nov., 1893, they were found congregated in immense numbers (Vanatta).

Pyramidula (Helicodiscus) lineata Say. Lansdowne Valley, uncommon; Wissahickon, a few specimens; near Strawberry Mansion (E. G. Vanatta); Germantown (R. Walton; Stone); near 58th St. Station, P. W. & B. R. R. (Pilsbry); "Found by Robert E. Griffith, near Philadelphia." (Say.); Westville, N. J. (Fox).

HELICIDÆ.

Polygyra (Triodopsis) thyroides Say. West Park, common; Wissahickon, common; Westville, N. J., common; Monument Cemetery (E. G. Vanatta); Fisher's Station, Germantown, and Fern Rock (Stone).

Polygyra (Triodopsis) albolabris Say. Wissahickon; Laurel Hill Cemetery; Perkiomen (Johnson); Fern Rock, rare (Stone); Westville, N. J. (Fox).

Polygyra (Triodopsis) tridentata Say. Wissahickon, moderately common.

Polygyra (Triodopsis) tridentata juxtidentis Pils. West Park, and Laurel Hill Cemetery, common.

Polygyra (Triodopsis) fallax Say [*H. introferens* Bld.]. Flat Rock Dam, rare (R. Walton); Monument Cemetery, rare (E. G. Vanatta); Atco, N. J. (Fox); "Presented to the Academy by Messrs. Hyde and Mason who found it in the vicinity of Philadelphia where it is not uncommon." (Say.)

Polygyra (Stenotrema) hirsuta Say. West Park, uncommon; near Strawberry Mansion (E. G. Vanatta); Perkiomen (Johnson).

Polygyra (Stenotrema) monodon Rack. Strawberry Mansion (Ford); Perkiomen (C. W. Johnson).

Vallonia pulchella excentrica Sterki. Ruins near School Lane, common; Falls of Schuylkill (E. G. Vanatta); Fisher's Station, Germantown, common (Stone).

Vallonia costata Müll. East bank of Schuylkill, at Flat Rock Dam, very common; Falls of Schuylkill (E. G. Vanatta).

PUPIDÆ.

Pupa armifera Say. Ruins near School Lane, common; Falls of Schuylkill (E. G. Vanatta).

Pupa contracta Say. Ruins near School Lane, common; east bank of Schuylkill, at Flat Rock Dam, uncommon; near Falls of Schuylkill (E. G. Vanatta); Fisher's Station, Germantown, common (Stone); Westville, N. J. (Fox).

Pupa pentodon Say. Near 58th St. Station, P. W. & B. R. R. (Pilsbry); Falls of Schuylkill (E. G. Vanatta).

Pupa corticaria Say. On walnut trees, School Lane, Germantown, rare.

Pupa fallax Say. Tulpohocken Valley, Germantown (John Ford).

Vertigo ovata Say. Tulpohocken Valley, Germantown (John Ford); "Numerous specimens were discovered by Mr. Wm. Hyde, in the vicinity of this city." (Say.)

Strobilops labyrinthica Say. Tulpohocken Valley, Germantown, rare.

ACHATINIDÆ.

Ferussacia lubrica Müll. (*subcylindrica* Auct., not Linné). Ruins near School Lane, common; Falls of Schuylkill (Vanatta).

[*Opeas octona* Linné. Introduced in green houses; Horticultural Hall (Robt. Walton)].

SUCCINEIDÆ.

Succinea avara Say. Conshohocken, common (R. Walton); Westville, N. J., one specimen; Tabor (Stone).

Succinea ovalis Gould. Wissahickon, uncommon; Westville, common; near Strawberry Mansion (Vanatta).

Succinea obliqua Say. Wissahickon, very common; Westville, N. J., common. Typical locality.

PHILOMYCIDÆ.

Philomycus carolinensis Bosc. Wissahickon, common; West Park, uncommon; South of Darby; Glenolden, Delaware Co. (Vanatta); Fisher's Station, Germantown (Stone).

AURICULIDÆ.

Carychium exile H. C. Lea. Wissahickon, rare (type locality).

Carychium exiguum Say. Wissahickon; Westville, N. J. (Fox).

LIMNÆIDÆ.

Limnæa catascopium Say. Delaware and Schuylkill Rivers, and Canal at Manayunk, common.

Limnæa columella Say. Ruins near School Lane, common; lakes near Memorial Hall, common; Perkiomen Creek (Johnson);

Tabor (Stone); Ponds along the Darby Creek Branch of the Reading R. R.

Limnæa humilis Say. Common in most localities.

Limnæa desidiosa Say. Schuylkill River, common.

Planorbis bicarinatus Say. Delaware and Schuylkill Rivers; Canal at Manayunk, common.

Planorbis trivolvus Say. Same localities as *P. bicarinatus*.

Planorbis deflectus Say. Canal at Manayunk, moderately common; Kaighn's Point, N. J., two specimens.

Planorbis exacutus Say. Ditch, South Broad Street, uncommon.

Planorbis dilatatus Gld. Near School Lane, rare; Ponds, South Broad Street; Fisher's Station, Germantown (Stone).

Planorbis parvus Say. Ditch at Kaighn's Point, N. J., common; near Strawberry Mansion (Vanatta); Fisher's Station, Germantown (Stone); Westville, N. J. (Fox).

Segmentina armigera Say. Westville, N. J., common; ditch at Kaighn's Point, N. J., common; ponds at Point Breeze (H. A. Pilsbry).

ANCYLIDÆ.

Ancylus rivularis Say. Rancocas Creek, N. J., and Schuylkill R., near Columbia Avenue Bridge (E. G. Vanatta); Perkiomen Creek (Johnson); Westville, N. J. (Fox).

PHYSIDÆ.

Physa heterostropha Say. This is the most abundant species, being found in almost all streams, ditches and ponds of this vicinity.

Physa heterostropha ancillaria Say. Delaware and Schuylkill Rivers. The specimens found show all the stages between *heterostropha* and *ancillaria*; Westville, N. J. (Fox).

Aplexa hypnorum L. Glen Riddle, Del. Co.; ditch at Kaighn's Point, N. J., uncommon. This is probably the extreme southern limit of this species.

VALVATIDÆ.

Valvata tricarinata Say. Schuylkill River, uncommon; canal at Manayunk, common. (Typical locality.)

Valvata bicarinata Lea. Same locality as the preceding; Westville, N. J. (Fox).

AMNICOLIDÆ.

Amnicola limosa Say. Canal at Manayunk, common; Westville, N. J.; Delaware River, below Gloucester. Typical locality.

Amnicola limosa porata Say. Canal at Manayunk, uncommon; lakes near Memorial Hall, Fairmount Park, common; Perkiomen Creek (Johnson).

Amnicola granum Say. Ditch at Kaighn's Point, N. J., rare; Corinthian Basin (John Ford).

Gillia¹ atilis Lea. Common in Delaware and Schuylkill Rivers; also canal at Manayunk; Westville, N. J.

Pomatiopsis lapidaria Say. Delaware River near Westville, N. J., common; near Strawberry Mansion (Vanatta).

VIVIPARIDÆ.

Lioplax subcarinata Say. Schuylkill River and Canal at Manayunk, common; Delaware River, very abundant.

Campeloma decisum Say. Schuylkill River, and Canal at Manayunk, common; Delaware River, uncommon; Ponds near Point Breeze (Pilsbry).

PLEUROCIDÆ.

Goniobasis virginica Gmel. Common in Delaware and Schuylkill Rivers; fine specimens at the mouth of Wissahickon Creek. Like many Goniobases, this species is dimorphic, the form with raised spirals (*multilineata* Say), occurring with the smooth specimens.

CYRENIDÆ.

Sphærium striatinum Lam. Delaware and Schuylkill Rivers; canal at Manayunk, common.

Sphærium sulcatum Lam. Cobb's Creek (John Ford).

Sphærium fabale Prime. Canal at Manayunk, uncommon.

Sphærium partumeium Say. Greenwich Point, S. Philadelphia (McGinty).

Sphærium transversum Say. Mouth of Wissahickon Creek; Dam in Tulpohocken Valley, Germantown, abundant; stream flowing from Lily pond near Memorial Hall (Vanatta); Westville, N. J. (Fox).

Pisidium virginicum Gmel. Delaware River; canal at Manayunk, uncommon; Rancocas Creek, N. J. (Vanatta).

Pisidium abditum Hald. Rock Run, uncommon; ditch at Kaighn's Point, N. J.; stream flowing from Lily pond near Memorial Hall (V.).

¹*Gillia* in Mollusca has several months priority over the same name in Pisces.

Pisidium variabile Pme. Ditch at Kaighn's Point.

Pisidium compressum Pme. Canal at Manayunk.

UNIONIDÆ.

Unio complanatus Solander. Delaware and Schuylkill Rivers, very common; canal at Manayunk, very fine specimens; Muckinipallus Creek, Glenolden, Delaware Co. (Vanatta); Corinthian Reservoir (Ford).

Unio nasutus Say. Delaware and Schuylkill Rivers, common. Typical locality.

Unio radiatus Lam. Canal at Manayunk, abundant; Delaware River, not common.

Unio heterodon Lea, Canal at Manayunk, uncommon; canal in 27th Ward (John Ford); Neshaminy Creek (C. W. Johnson).

Unio ochraceus Say. Delaware River, common. (Type locality).

Unio cariosus Say. Delaware River, rare. (Type locality.)

Margaritana undulata Lea. Raccoon Creek, N. J.; Canal at Manayunk; Muckinipallus Creek, Glenolden, Delaware Co. (Vanatta); Neshaminy Creek (Johnson); "Delaware and Schuylkill Rivers" (Say).

Margaritana marginata Say. Tohickon Creek, Bucks Co.; Neshaminy Creek (C. W. Johnson); Muckinipallus Creek, Glenolden, Delaware Co. (Vanatta).

Anodonta fluviatilis Lea. Delaware and Schuylkill Rivers; canal, Manayunk, moderately common; Muckinipallus Creek, Glenolden, Delaware Co. (Vanatta); Wister's Dam, Germantown (Stone); Lily Pond near Memorial Hall (V.).

Anodonta fluviatilis Tryoni Lea. Typical localities, Schuylkill River above Phila., and Delaware River at League Island; Westville, N. J. (Fox).

Anodonta undulata Say. Canal, 27th Ward (J. Ford).

NOTE ON THE SPECIES OF VERONICELLA FOUND IN CENTRAL AMERICA.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

It must be confessed that our knowledge of the Central American forms of *Veronicella* is singularly inadequate, and the purpose of this note is mainly to draw attention to the matter, in the hope that those who have the opportunity will add to our information.

It may be as well to say at once, that for satisfactory work in this genus it is desirable to have at least a dozen mature examples of each species. Working with few examples, there is danger of taking varietal characters for specific ones, if the species is little known. Once the true specific characters have been ascertained from a good series, any single example, if mature, can be determined; but it is quite otherwise when the form is new, or belongs to a species which has been described from only one or two examples.

From necessity, species in this genus have, in the past, usually been described from one or two specimens. The descriptions, if prepared with reasonable care, even without anatomical details, will, I believe, be easily recognizable hereafter. But at present we do not know, in very many cases, *which* of the characters mentioned in the descriptions are really specific, and consequently whether the assumed species are valid.

I do not wish to suggest that species of *Veronicella* ought not to be described without numerous examples. If naturalists were to wait in every case until the material was as abundant as they could desire, our knowledge of tropical species of many groups would hardly advance at all. When a student introduces a presumed new species of *Veronicella*, having carefully ascertained that it *differs* from all previously described forms, and in his description sets forth that difference, he undoubtedly does good service. We are not to be prevented from interesting ourselves in the forms of *Veronicella* because we do not always know whether we are dealing with species, races, or varieties. But we *should like* to know the real status of each form, and must consequently urge those who have the chance to collect material to do their best to obtain sufficient.

The first Central American *Veronicella* to be named was *V. olivacea* Stearns, 1871. It was found in Nicaragua and has been supposed to inhabit California also. Although it is practically certain that it is not a native of California, it has been described in works on North American mollusca on the supposition that it belonged to that fauna. I have seen a specimen from Nicaragua, and have given a few descriptive notes in Ann. Mag. Nat. Hist., Nov., 1890, p. 389. Mr. W. G. Binney has published a figure of this same specimen.

The next species was made known in the year following, 1872. This was *V. moreleti* Crosse and Fischer, from Mexico; fulvous with two blackish bands, whereas *olivacea* has no dark bands.

In 1873 a second Mexican species was announced, *V. mexicana* Pfeffer, in Strebel's work on the fauna of Mexico, p. 130. It was 47 mm. long, red-brown to grey-brown and black-brown.

For many years no more additions were made; until in 1885 (or Jan. 1886?) Dr. Semper's elaborate work on the genus appeared. In this, on p. 293, we find *V. mexicanus* n. sp., from Mexico; but the author having discovered, too late to change the text, that there was already a species of that name, takes the opportunity of writing *V. strebelii* instead on the explanation to the plate. This *mexicanus* = *strebelii* is 51 mm. long, $15\frac{1}{2}$ broad, with the female orifice $1\frac{1}{2}$ mm. from sole and almost exactly equidistant from each end. On p. 316 of the same work, Semper describes a true *mexicanus* Pfeff., which he had from Strebel. It was found in Vera Cruz, and was whitish-flesh, only 20 mm. long, with the ♀ orifice a little hind of the middle. If this specimen was really of the same species as originally described in 1873, it must have been somewhat immature.

In the same work of Semper, p. 295, appears a Chilean species, *V. decipiens* Semper. This is supposed to be also a native of Mexico, but I think the latter habitat must be accepted with some reservation; unless perchance, it has reached there accidentally through human agency. It is dark yellowish-brown, with the mantle black-spotted, 42 mm. long, $16\frac{1}{2}$ broad, ♀ orifice 1 mm. from sole, and somewhat *anterior to the middle*. This *V. decipiens* is very much like the Chilean *V. adspersa* Heynemann; so much so that one strongly suspects that they are forms of one species. They were published nearly at the same time, but I think *adspersa* has priority. Since Semper's work no further additions have been made.

In the British Museum are two other forms, which are the more interesting in that they represent new localities. They do not seem to be precisely identical with any of the described species, but all things considered, it seems preferable to leave them unnamed for the present. Descriptive notes are appended:

(1.) *Veronicella* sp. nov., vel *mexicana* var.

Long. (in alch.) $42\frac{1}{2}$, lat. $20\frac{1}{2}$, sole lat. 10 mm. ♀ orifice from head 22 (almost median), from sole 2 mm. Sole rather rounded posteriorly, not projecting beyond mantle, finely and closely transversely striate. Mantle above rugose-granulose, not at all papillate; color pale grayish-ochreous, above obscurely gray mottled, with the slightest indication of a dorsal and lateral dark band, only noticeable when looked for. Back arched, rounded. Upper tentacles grayish, lower pale ochery.

Honduras. Collector unknown. Heynemann had seen it when he visited the museum, and had written "nov. sp.?"

(2.) *Veronicella* sp. nov., vel *punctatissima* subsp.

Long. (in alch.) $41\frac{1}{2}$, lat. 12, sole lat. 4 mm. ♀ orifice from head 21 (almost median), from sole $2\frac{1}{2}$ mm. Sole very narrow, rounded behind, not projecting posteriorly, regularly and strongly transversely striate its edge longitudinally grooved. Mantle above thickly but rather irregularly impressed punctate, not papillate. Superior tentacles gray, lower pale ochrey.

Jaw brown, not very dark, with 36 very strong ribs. Penis tapering. Color variable, as follows:

- (a) Pale ochreous, above brown from thick brown mottling, with a slightly indicated but quite observable pale dorsal line. *Below with sparse black mottling.* Six examples.
- (b) Similar, but with more or less black spotting also above, though sparse. Four examples.
- (c) Similar, but dark brown above, no pale dorsal line.

Panama, Volcan de Chiriqui. Collector unknown.

The interesting point may here be noted, that whereas the Nicaraguan *olivacea* and the Honduras species are typically Central American forms, and show a good deal of resemblance to the species of the greater Antilles, the Panama species is quite different, and belongs with the series of the lesser Antilles, Trinidad, etc.

NOTES AND NEWS.

UNIO CARIOSUS and OCHRACEUS.—By an unfortunate oversight, the wood-cuts of these two species in the March number were transposed. The figure on page 121 is *U. cariosus*; that on page 122 is *U. ochraceus*.

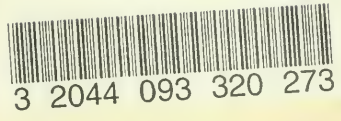
BYTHINIA TENTACULATA.—A new locality for this species is Black Lake, Holland, Michigan, Mr. L. H. Streng having collected adult and young in all stages of growth there.

MR. H. E. SARGENT, having spent some weeks in New England, has returned to his home at Woodville, Ala.

MR. JAMES M. DE LANEY has removed from Rochester to South Livonia, Livingston Co., N. Y.

NEW PUBLICATIONS.

DISTRIBUTION OF THE LAND AND FRESH-WATER MOLLUSKS OF THE WEST INDIAN REGION, and their Evidence with Regard to Past Changes of Land and Sea. By Charles Torrey Simpson (Proc. U. S. Nat. Mus., XVII, 1894).—After a statement of the geographic facts in regard to the region, and the depths of sea between and around the main islands, Mr. Simpson considers the means of distribution of the land and fresh-water mollusks from island to island, concluding that while some forms have been transported by drifting trees, etc., the main means of transport has been by means of former direct land connection of islands now separated. "There appears to be good evidence of a general elevation of the Greater Antillean region, probably some time during the Eocene, after most of the important groups of snails had come into existence, at which times the larger islands were united, and there was land connection with Central America by way of Jamaica. * * * At some time during this elevation, there was probably a landway from Cuba across the Bahama plateau to Florida, over which certain groups of Antillean land mollusks crossed. * * * There followed a period of general subsidence. During this the island of * * * Jamaica was first isolated, then Cuba, and afterwards Haiti and Puerto Rico were separated. The subsidence continuing until only the summits of the mountains of the four Greater Antilles remained above water; then followed another period of elevation which has lasted until the present time. * * The Bahamas have appeared above the surface of the sea, either by elevation or growth, and have been peopled by forms drifted from Cuba and Haiti. The lesser Antilles have been peopled, for the most part, from S. America." These conclusions are based upon tables showing the distribution of species and genera on the various islands, and the later movements are supported by well-known geological facts. The evidence for the earlier elevation should be compared with Spencer's "Reconstruction of the Antillean Continent" (Bull. Geol. Soc. Amer., VI, Jan., 1895), founded upon a study of the supposed sunken river-valleys, and altogether supporting Mr. Simpson's conclusions. That the West Indian region actually stood *two miles* above its present level, as claimed by Spencer, is a proposition requiring much more proof than has been offered, to bring it out of the realm of mere suggestion or hypothesis; and we are certainly not prepared to endorse it; but the orogenic movements required to fulfill the conditions asked by Mr. Simpson are far more moderate, and, it seems to us, by all odds the most reasonable explanation of the facts of distribution. Mr. Simpson's paper concludes with the descriptions of *Sagda maxima*, *Neocyclotus bakeri*, *Lucidella costata* and *Pleurodonte bowdeniana* n. spp., from Jamaica, the latter three from the Miocene beds at Bowden.



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